Socio-demographic and behavioural determinants of visitor spending at the Kruger National Park in South Africa

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Abstract

The Kruger National Park is one of the most visited national parks in the world and one of South Africa's prime tourism destinations. It attracts more than 1 million visitors per year and, as such, plays an important role in the regional and national economy. The article aims to assess the extent to which socio-demographic and behavioural indicators influence the spending of tourists to the Park. From 2001–2007 surveys have been conducted amongst tourists to the Park including a number of socio-demographic, behavioural and motivational questions, totalling 2 904 questionnaires used in the analysis. The methodology includes both cross-sectional regression analysis and pseudo-panel data analysis to identify and compare possible influences on spending. Findings indicate that, even though a combination of socio-demographic, behavioural and motivational factors influence spending at National Parks, behavioural indicators seem to be the most important and consistent influencer.

Key words: Socio-demographics; motivations; Kruger National Park; South Africa; pseudo-panel analysis

JEL D10, M31, Q26

1
Introduction

The Kruger National Park in South Africa is one of the best known and most profitable national parks in the world. The park accounts for 75 per cent of the total number of bed nights sold in national parks in South Africa and attracts in excess of 1 million visitors per year. From its most northern to most southern point, the park stretches for 35 km and measures 60 km at its widest point, covering a total area of 21 497 sq km (see Map 1). The park provides refuge for 145 mammal species, 500 bird species, 116 reptiles, 34 amphibians, 49 fishes, 457 types of trees and shrubs and 1500 smaller plants (Van Niekerk, 2002). The Kruger National Park was established in 1889 and opened to the general public in 1927 for the first time (SANParks, 2007). Since then, the Park has developed into a tourist destination that does more than just conservation.
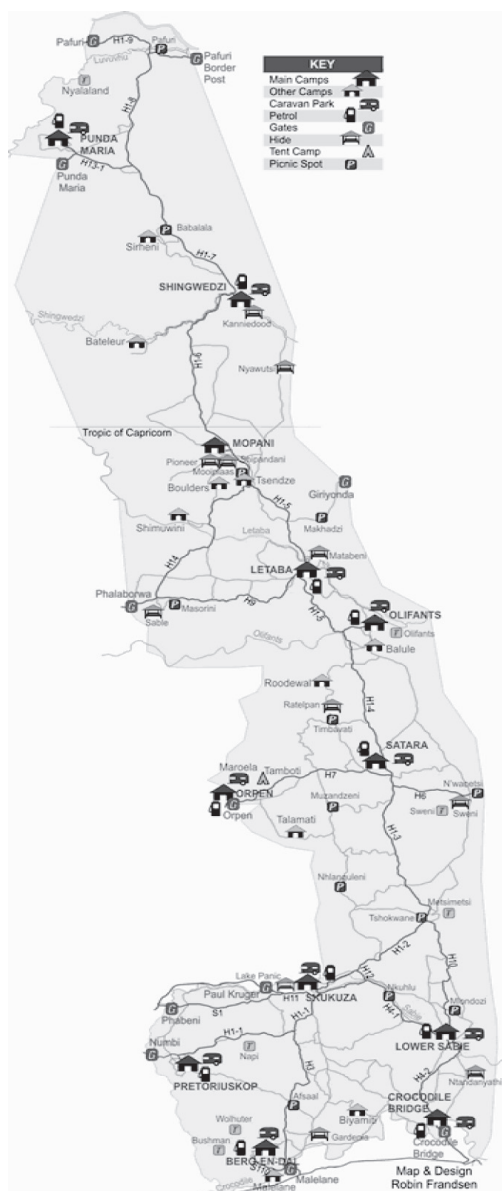
National Parks in South Africa have three distinct purposes:

- Firstly, the conservation of a representative sample of the biodiversity of the country.
- Secondly, to provide a recreational outlet to experience and enjoy the natural wonders of the parks.
- Thirdly, to maintain a relationship of community upliftment and capacity building amongst people living in the areas in and around the parks.

Based on the last point, national parks have to create an environment in which the communities can benefit. In order for communities to benefit, it is important that tourists spend money in the local economy. Saayman and Saayman (2006) showed that the Kruger National Park has an economic impact of R1,5 billion that benefits many businesses and people in surrounding areas. For national parks to be able to attract the right market, they have to understand the

spending behaviour of visitors, for this has a direct bearing on its economic impact. The latter is influenced by the amount tourists spend, the length of stay, the number of tourists and the multiplier effect (Van der Merwe et al., 2006). The purpose of this article is to assess the extent to which socio-demographic and behavioural indicators influence the spending of tourists to the Kruger National Park.

Map 1
The Kruger National Park

The remainder of the paper is structured as follows: Section 2 will present a brief literature overview on the behavioural and socio-demographic elements that influence spending. Section 3 will describe the methodology used in the paper. Section 4 will present the results of the analysis and a discussion of the results, while section 5 will make concluding remarks.

2
Overview of socio-economic and behavioural determinants

From the perspective of tourist or consumer behaviour, personal factors refer to socio-demographic characteristics of the individuals (gender, age, level of education, family life cycle, social class, place of residence, etc.) as well as those of a psychological nature (motivations, values, personality, lifestyle, etc.). Those personal factors affect the individual's cognitive organisation or evaluation of stimuli and therefore also influence the perceptions of the environment and the resulting image (Baker & Crompton, 2000; Beerli et al., 2003). The socio-demographic profile behaviour can be described as the mental, emotional and physical activities in which people engage when selecting, purchasing, using and disposing of a product or service so as to satisfy needs and desires (Wilkie, 1994). The reason for studying socio-demographic determinants of spending is that a tourist does not make purchase decisions in isolation. The mix of cultural, social, personal and psychological factors and previous experiences, all of which influence behaviour, is largely uncontrollable. Because of the influence exerted on buying patterns, it is essential that as much effort as possible is put into understanding how these factors interact and ultimately how they influence decisions (Lamb et al., 2002).

Lu and Pas (1999) indicate that there are very few models available that capture the relationship between socio-demographics, activity participation and travel behaviour. They found that socio-demographic determinants (such as age, gender, employment) have a definite effect on both activity participation (recreation, work, travel), and travel behaviour

(number of trips, travel time), and that travel behaviour is better explored by including activity participation in the model. This finding is supported by Jang et al. (2004), Cai et al. (1995), Fish and Waggle (1996), Walker et al. (1996), Saayman and Saayman (2006), Cai (1998) and Van der Merwe, Saayman and Krugell (2006), all of whom also found that socio-demographic variables can be used to explain travel behaviour as well as the relationship between variables. According to Letho et al. (2004) and Sakai (1988), the reason for or purpose of travel has a definite impact on expenditure levels. Saayman and Saayman (2006) reported that attracting high-spenders instead of crowds is not only desirable from an environmental point of view, but also from an economic impact point of view. In the context of an attraction such as the Kruger National Park, it is important to attract high-spenders because conservation areas have to create income but with as little environmental impact as possible. Figure 1 illustrates the conceptual model offered by Lu and Pas (1999) whereby socio-demographics influence activity participation and travel behaviour. However, it has been adapted in the current context to include the propositions that personal factors (thus socio-demographic and psychological factors) influence travel behaviour, which influences spending behaviour.

Figure 1
The influence of personal factors on activity participation, travel behaviour and tourist spending
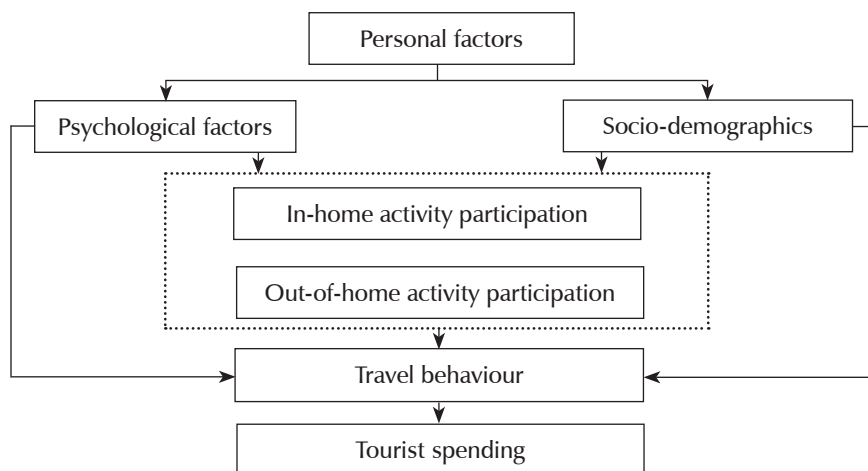
(Source: adapted from Lu en Pas, 1999)

Various studies found significant relationships between socio-demographics and travel behaviour on tourist spending. Oppermann (1996), for example, found that repeat visitors spend less than first-time visitors. However, Gyte and Phelps (1998) found the opposite, while Jang et al. (2004) also concluded that frequency of visitation is an influencing factor in visitor expenditure. Skuras et al. (2005) showed a positive relationship between group size and expenditure. However, Downward and Lumsdon (2002) found the opposite relationship.

The role of age on spending is not conclusive. Studies such as those of Mok and Iverson (2000) and Kastenholz (2005) found a positive relationship between age and spending, while Mudambi and Baum (1997) reported an inverse relationship between age and spending.

With regard to psychological factors and especially motivational factors, only a few studies addressed the issue of travel motivation to national parks. These include studies by Tao et al. (2004), Uysal et al. (1994) and Van der Merwe and Saayman (2008) that indicated that

tourists travel to different national parks for different reasons (motives). However, none of these studies cited above address the influence that travel motivations have on spending even though spending behaviour, just like travel motivations, differs between national parks.

From a marketing point of view, this information is important, since some tourists spend more than others, and when variables must be selected for segmenting markets, the marketer's goal should be to identify market segments that differ from others in the ways they respond to a particular marketing mix (Kinnear et al., 1995; González & Bello, 2002). Through market segmentation a tourist profile can be developed that will enable park managers and marketers to concentrate their resources and efforts so that maximum penetration of that market can be achieved (Doole & Lowe, 2001). The efficient use of available resources is essential because financial support for conservation from the authorities is on the decline (Saayman & Saayman, 2006).

To ensure continuity and growth, a destination such as the Kruger National Park is dependent, *inter alia*, on tourists and the satisfaction of their needs. An important aspect is that competition in terms of parks and game reserves is increasing visitor numbers and therefore satisfying tourists is important. Although total satisfaction of tourists' needs is not the goal in itself, striving to achieve this enables the park to attain its own goals in terms of visitor numbers (Strydom et al., 2000).

3
Methodology

Since the data used in the analysis were collected over a period of seven years (2001 to 2007) using consumer-based questionnaires, the methodology used will be discussed under the following headings: (i) the questionnaire, (ii) the samples, and (iii) the method.

3.1 The questionnaire

The questionnaire used to survey visitors to the Kruger National Park has remained fairly consistent over the past seven years. In Section A, demographic details are surveyed, while section B focuses on spending behaviour and motivational factors. Section C of the questionnaire consists of more detailed information on the consumer's general behaviour. This article will deal mainly with the information obtained in sections A and B.

The dependent variable is spending per person, which is calculated by adding the spending of the respondent on the various components asked, and subtracting transport cost to the park from the number obtained. The result is total spending excluding transport, which is then divided by the number of people whom the respondent is paying for on the trip, to yield an amount termed "spending per person". The reasons that transport costs are excluded are that spending on transport normally does not take place in the Park and that transport from an origin further away would inflate the spending per person. The socio-demographic, behavioural and motivational factors used in the analysis are described in Table A1 in Appendix A.

Some clarification on the "province" variable might be necessary. The provinces are listed from richest to poorest, based on the Regional GDP per capita of the province. It is therefore expected that the sign of the coefficient should be negative. Other expectations based on previous research are:

- Older people would be expected to spend more than younger people – therefore it is hypothesised that there is a positive relationship between spending per person and age (refer to Mok & Iverson, 2000).

- The relationship between spending and language and spending and marital status are not consistent between various studies and therefore these relationships are hypothesised to be either negative of positive (refer to Saayman & Saayman, 2006).

- Better qualified persons are expected to earn more income and thus to spend more – therefore it is hypothesised that there is a positive relationship between qualification and spending (refer to Saayman & Saayman, 2006).

- The group size should be ambiguous – one might hypothesise that larger groups may

mean costs are shared per person (a negative sign), but on the other hand it might also be hypothesised that more is spent on other activities due to group pressure (a positive sign) (refer to Downward & Lumsdon, 2002 and Skuras et al., 2005).

- People who visit National Parks more frequently are expected to spend more and it is thus hypothesised that there is a positive relationship between spending and frequency of visits (refer to Gyte & Phelps, 1998).

- The longer one stays, the greater the expected spending and it is therefore hypothesised that there is a positive relationship between spending and days spent at the Kruger National Park (see Van der Merwe et al., 2006).

- The sign of the Wildcard is ambiguous, since owning a Wildcard means a discount on Park fees (one might therefore hypothesise a positive relationship), but it may also mean spending more time in the Park (an alternative hypothesis of a negative relationship). The Wildcard is valid for a year and replaces the conservation fee that a visitor has to pay every time one visits a National Park. It was first introduced in 2005 and once a person buys the card National Parks in South Africa can be visited as many times as desired without paying additional conservation fees within that period.

- One's preference for more elaborate catering may indicate greater spending on dining out and more expensive types of accommodation – thus it can be hypothesised that a positive relationship exists between catering preferences and spending (refer to Van der Merwe et al., 2006).

- For the motivational factors, the signs are again ambiguous and no a priori hypotheses can be formulated (refer to Letho et al., 2006).

3.2 The samples

Due to financial and accommodation constraints, the surveys could only be conducted once yearly from 2001 to 2005. Since 2006, two surveys were conducted annually – a winter and a summer survey. In Table 1, the sample sizes and the different camps where the surveys have taken place are listed, and it is evident that the sample size has grown significantly over the past years. All the visitors to the camp received a questionnaire which they completed in their own time. Field workers collected the questionnaires during the evenings and early in the morning.

It is difficult to determine whether the sample is representative of the population, since National Parks do not have data on the characteristics of the visitors to the Park, except for these surveys. However, a comparison of the profiles as captured in these surveys (2001–2007) has remained consistent. Most visitors to the Park are South Africans, while foreigners are relatively few in absolute numbers. This consistency in sample composition over seven years seems to suggest that the sample can be seen as representative. Table 1 shows the total number of guests to the Kruger National Park during each year. This number includes both overnight and day visitors. Note that the strict definition of a tourist is applied for the purposes of this article and only overnight visitors are included. To have a better idea of the proportion of visitors that are overnight visitors, the unit nights sold (including camping nights) are also indicated. Most visitors, however, stay more than one night in the Park (3.5 nights on average for the period 2001–2007) and dividing the unit nights sold by the average nights spent in the Park gives an approximation of the overnight travel parties during one year. Dividing total overnight parties by 12 months gives an estimate of the visitor groups per month. Only questionnaires that had complete spending information and indicated the number of people in the travel party could be used in the final analysis, as indicated in Table 1 (the adjusted sample).

Table 1

Total number of questionnaires completed – 2001 to 2007

Year	2001	2002	2003	2004	2005	2006	2006	2007
Survey month	May	July	December	December	December	July	November	June
# of questionnaires	220	323	246	400	455	476	171	613
Camps	78 Berg en Dal 68 Satara 40 Olifants 34 Shingwedzi	62 Berg en Dal 87 Satara 93 Olifants 81 Shingwedzi	20 Berg en Dal 75 Satara 21 Olifants 66 Lower Sabie 64 Skukuza	70 Berg en Dal 84 Satara 39 Olifants 72 Lower Sabie 135 Skukuza	57 Berg en Dal 128 Satara 79 Letaba 63 Lower Sabie 128 Skukuza	19 Malelane 74 Pretoriuskop 249 Skukuza 49 Olifants 85 Letaba	36 Letaba 55 Skukuza 80 Satara	161 Berg en Dal 173 Satara 191 Skukuza 88 Letaba
Adjusted sample	220	296	194	343	397	587		551
Total guests	933,488	1,059,122	1,336,981	1,285,232	1,243,467	1,313,185		n/a
Unit nights	616,908	637,113	597,924	621,735	650,257	696,161		n/a
Visitor groups	176,259	182,032	170,835	177,639	185,788	198,903		n/a
Groups per month	14,688	15,169	14,236	14,803	15,482	16,575	16,575	n/a

3.3 The method

Since the data were obtained randomly during a month in a specific year, cross-sectional analysis is completed. Thus, any explanatory variables can be treated as random outcomes along with data on response variables. The most basic model estimated is a regression model where:

$y_i = \alpha + x_i\beta + \varepsilon_i$, with i = 1, 2, 3 ... n.

where y_i = spending per person; x_i = vector of explanatory variables (as indicated in Table 1); ε_i = i.i.d error term. Wooldridge (2002: 10) notes that in a random sampling context, the errors are always independent and identically distributed, regardless of how they are related to x_i. The logarithms of all variables were taken to enhance the ease of interpretation.

For each year the survey was conducted, a cross-sectional model is estimated. Since there are so many possible variables to include, a stepwise least squares regression method was initially used to identify the most important variables for inclusion. A stepwise regression chooses the most appropriate variables to include in the model, based on various statistical criteria. EViews 6 was used in all the estimations. The method used in selecting the variables to be included is the stepwise-forwards, which starts with no additional regressors in the regression and then adds variables based on their p-values. The variable with the lowest p-value will be chosen and added, and this process continues until there is no variable left with a p-value less than the included variables (QMS, 2007: 55–60). The results of the stepwise regression were then subjected to diagnostic analyses and changes made to reach the final regression model.

Since the survey was repeated over a number of years and mostly covering similar camps in the Kruger National Park, the data obtained can be viewed as a panel – consisting of both a cross-section and a time component. Yet, Inoue (2008) notes that repeated cross-sections from survey data cannot be treated as genuine panels, and hence a pseudo-panel should be constructed. Pseudo-panels are constructed by grouping individuals together according to some characteristic, and averaging the observations in each group, or cohort. Since this is done for every cross-section, a time dimension is again obtained (Cottrell & Gaubert, 2003). The pseudo-panel data model that is then estimated is (Inoue, 2008):

$$\overline{y}_{st} = \overline{\alpha}_{st} + \delta_s + \theta'\overline{w}_{st} + \overline{\varepsilon}_{st},$$

for s = 1, …, S; t = 1, …, T

where s indicates the different cohorts and t, time. The bar above the variable denotes that it is an average observation, since the cohorts are created via averaging the individual observations. $\overline{\alpha}_{st}$ denotes the intercept and captures the average of the individual specific effects that constitute group s, δ_s captures the group-specific effects, and $\overline{w}_{st}$ the group-time-specific explanatory variables (see Table A1 in Appendix A for variables used in the analysis) as well as the individual-specific characters included in each group.

A characteristic often employed to create the cohorts is age or date of birth (see Cottrell & Gaubert, 2003). Thus, for every cross-section, the individuals were grouped into the 6 age groups, as described in Table A1 (Appendix A). Yet, age group 1 had very few observations in all years, and age groups 1 and 2 had to be merged since it is a prerequisite for pseudo-panel data that the number of individuals in each group must be large relative to the number of groups and time periods. In order to ensure homoskedasticity in random errors, Matas and Raymond (2007: 6) suggest that the variables are weighted by the square root of the number of individuals in each cohort. This procedure was followed, which rendered all variables to be continuous.

The same procedure was followed as with the cross-section analysis, where a stepwise regression indicated the independent variables that should be included before diagnostic tests were completed. Inoue (2008) shows that using fixed effects when estimating the pseudo-panel model, account for group effects. Fixed effects are therefore used in the final estimates.

4
Results

The results of the various socio-demographic and motivational factors that influence spending per person at the Kruger National Park will be discussed in two sections, firstly the results of the cross-section analysis and, secondly, the results of the pseudo-panel analysis.

4.1 Cross-section results

The stepwise regression indicated that the following variables should be included in the regression model for each year:

Table 2
Variables identified by the stepwise

2001	2002	2003	2004	2005	2006	2007
PEOPLE	PEOPLE	PEOPLE	PEOPLE	PEOPLE	PEOPLE	PEOPLE
DAYS	DAYS	DAYS	DAYS	DAYS	DAYS	DAYS
WILDLIFE	SANIM	PROV2	PREF	FAMILY	CHILD	VISITS
QUAL	PROV2	RELAX	BRAND	EDU	FRIENDS	FAMILY
FAMILY	ROUTINE	HIKING	CONF	PROV2	GREWUP	PREF
EXPLORE	AGE	ANIMALS	FAMILY	FRIENDS	PREF	QUAL
AGE	LANG	FAMILY	GREWUP	QUAL	CLIMATE	ACC
MARRY	RELAX	SPECIES	PLANTS	PREF	WILDCARD	ENDANGER
SANIM	ENDANGER	WILDLIFE	ANIMALS	RELAX	MARRY	EDU
LANG	WILDLIFE	MARRY	ENDANGER	WILDLIFE	RELAX	LANG
ACC	SPECIES	AGE	CLIMATE	ANIMALS	ENDANGER	HIKING
HIKING	CHILD	PREF	SANIM	LANG	AGE	CONF
RELAX	VISITS	CHILD	CHILD	PLANTS	PLANTS	GREWUP
ROUTINE	FRIENDS	EXPLORE	ROUTINE	PHOTOA	QUAL	SPECIES
EDU		VISITS	LANG		VISITS	PHOTOA
		FRIENDS	ACC		PROV2	PLANTS
		PHOTOA	AGE			FRIENDS
			RELAX			EXPLORE
						BRAND

Refer to Table A1 in Appendix A for a description of the abbreviations of the variables and the relevant scale

It can be seen from Table 2 that a number of explanatory variables are present in almost all the years' cross-section analyses, while others occur only once or twice.

- Age and language are the socio-demographic variables that were identified in most of the years as having an influence on spending. This is followed by qualification, province of residence and language, while marital status shows up in three of the years' results.

- The behavioural variables that seem to appear consistently in all the years' analyses are the number of people in the group as well as the number of nights spent in the Park. Preferences for catering (abbreviated as 'pref') also appear consistently each time since its inclusion in 2004. The number of visits to National Parks also appears in four of the years, while the wildcard only appears in the 2006 results.

- A number of the motivational factors also appear in each year's results. However, there seems to be a variety of motivational factors that influence spending. Taking time with family and friends, and visiting the Park to relax show up consistently as factors that

influence spending. To learn about wildlife, plants and endangered species are also often included in influencing factors.

Since the analysis is based on cross-sectional data, it should be tested for the presence of heteroskedasticity. The tests performed were the Breusch-Pagan-Godfrey (BPG) test as well as the White's heteroskedasticity test. The BPG test is a Lagrange multiplier test of the null hypothesis of no heteroskedasticity. The White test is a test in the same vein as BPG and again the null hypothesis is no heteroskedasticity. The results of these tests are summarised in Table 4. While the F-statistic for a redundant variable test is also included, the more important test statistics are the Obs*R-squared and Scaled explained SS statistic for the BPG test. The most important test statistic for White's test is the Obs*R-squared.

The results of the BPG test indicate that the null hypothesis of no heteroskedasticity can be rejected for the years 2002 and 2007, based on the Obs*R-squared statistic. The Scaled explained Sum of Squares statistic indicates significant values for the years 2005 and 2007. For White's test, the year 2005 is the only year where the null hypothesis of no heteroskedasticity could be rejected with a 95 per cent certainty. For these years, the White Heteroskedasticity-Consistent standard errors and covariances are determined in the model estimates. The results of the various cross-section regressions are indicated in Table 4.

From Table 4, it is evident that these socio-demographic, behavioural and motivational factors explain between 24 and 46 percent of the variance in spending per person at the Kruger National Park. The behavioural indicators seem to be the factors that influence spending consistently through all the years. As expected, the number of days spent at the Park has a positive influence. The more people there are in a travel party, the more costs can be shared and the influence on spending is thus negative. As expected, the preference for more elaborate catering has a positive influence on spending and it is significant in almost all the years since it has been included in the questionnaire. It is also noteworthy that the number of times that the National Park is visited does not significantly influence spending, except for the year 2007, where the influence is negative. It is noteworthy that the wildcard negatively influenced spending in its early inception in 2006, yet declined in 2007. One reason might be that the wildcard influenced people to visit the Kruger National Park (and other national parks) more frequently in order to maximise the benefits of the card, and this might be the reason why the number of visits plays a more prominent role in spending patterns in 2007.

Of the socio-demographic variables, it is only the province of residence that has a significant influence in a number of years, and the influence is (as expected) negative – people from poorer provinces spent less since income per capita is lower in these provinces. Qualification is indicated as a significant factor but the sign, and thus the influence, seems to be inconsistent. It is interesting that the age of the respondent has no significant influence on spending per person, except for the year 2006 where the sign is positive and the influence significantly different from zero.

Some motivational factors have a significant influence, including wildlife, variety of animals and endangered species, special animals, to relax, to hike, the Kruger brand, the education of children, spending time with family and friends and for conferences. The greater the importance these have for the visitor, the more they are inclined to spend. The only exceptions are conference attendees (who probably receive special rates and packages), people who visit the Kruger National Park just because it is a well known park (the brand), and people who visit to spend time with friends. If the Park is visited for the benefit of children, the influence might vary (negative sign in 2004 and positive in 2006).

Table 3

Results of the heteroskedasticity tests

BPG TEST				
2001	F-statistic	1.262884	Prob. F(15,201)	0.2286
	Obs*R-squared	18.68976	Prob. Chi-Square(15)	0.2281
	Scaled explained SS	17.23950	Prob. Chi-Square(15)	0.3047
2002	F-statistic	2.182589	Prob. F(14,221)	0.0093
	Obs*R-squared	28.66665	Prob. Chi-Square(14)	0.0116
	Scaled explained SS	20.96414	Prob. Chi-Square(14)	0.1026
2003	F-statistic	1.760460	Prob. F(17,92)	0.0456
	Obs*R-squared	27.00007	Prob. Chi-Square(17)	0.0581
	Scaled explained SS	20.80901	Prob. Chi-Square(17)	0.2350
2004	F-statistic	1.237265	Prob. F(18,195)	0.2347
	Obs*R-squared	21.93551	Prob. Chi-Square(18)	0.2349
	Scaled explained SS	17.28298	Prob. Chi-Square(18)	0.5037
2005	F-statistic	1.559023	Prob. F(14,267)	0.0907
	Obs*R-squared	21.31047	Prob. Chi-Square(14)	0.0939
	Scaled explained SS	54.07555	Prob. Chi-Square(14)	0.0000
2006	F-statistic	1.065091	Prob. F(16,361)	0.3874
	Obs*R-squared	17.03959	Prob. Chi-Square(16)	0.3830
	Scaled explained SS	16.80405	Prob. Chi-Square(16)	0.3984
2007	F-statistic	1.783859	Prob. F(19,424)	0.0225
	Obs*R-squared	32.86493	Prob. Chi-Square(19)	0.0249
	Scaled explained SS	74.61457	Prob. Chi-Square(19)	0.0000
WHITE TEST				
2001	F-statistic	0.844958	Prob. F(135,81)	0.8072
	Obs*R-squared	126.8936	Prob. Chi-Square(135)	0.6782
	Scaled explained SS	117.0471	Prob. Chi-Square(135)	0.8652
2002	F-statistic	1.409967	Prob. F(119,116)	0.0321
	Obs*R-squared	139.5330	Prob. Chi-Square(119)	0.0961
	Scaled explained SS	102.0415	Prob. Chi-Square(119)	0.8670
2003	F-statistic	1.527206	Prob. F(17,92)	0.1025
	Obs*R-squared	24.21003	Prob. Chi-Square(17)	0.1138
	Scaled explained SS	18.65871	Prob. Chi-Square(17)	0.3485
2004	F-statistic	0.968379	Prob. F(189,24)	0.5731
	Obs*R-squared	189.1912	Prob. Chi-Square(189)	0.4824
	Scaled explained SS	149.0638	Prob. Chi-Square(189)	0.9855
2005	F-statistic	1.678034	Prob. F(119,162)	0.0011
	Obs*R-squared	155.6915	Prob. Chi-Square(119)	0.0135
	Scaled explained SS	395.0690	Prob. Chi-Square(119)	0.0000
2006	F-statistic	1.083945	Prob. F(151,226)	0.2902
	Obs*R-squared	158.7715	Prob. Chi-Square(151)	0.3163
	Scaled explained SS	156.5768	Prob. Chi-Square(151)	0.3612
2007	F-statistic	1.259522	Prob. F(209,234)	0.0430
	Obs*R-squared	235.0547	Prob. Chi-Square(209)	0.1043
	Scaled explained SS	533.6540	Prob. Chi-Square(209)	0.0000

Table 4
Results of the cross-section estimations (Dependent: spending per person)

2001		2002		2003		2004		2005		2006		2007	
Variable	Coeff & prob	Variable	Coeff & prob	Variable	Coeff & prob	Variable	Coeff & prob	Variable	Coeff & prob	Variable	Coeff & prob	Variable	Coeff & prob
Constant	6.1288 (0.000)***	Constant	7.3752 (0.000)***	Constant	5.3619 (0.000)***	Constant	7.3706 (0.000)***	Constant	8.1189 (0.000)***	Constant	7.8704 (0.000)***	Constant	6.5395 (0.000)***
People	-0.7975 (0.000)***	People	-0.7446 (0.000)***	People	-0.8736 (0.000)***	People	-0.5783 (0.000)***	People	-0.7227 (0.000)***	People	-0.8735 (0.000)***	Days	0.5114 (0.000)***
Days	0.5215 (0.000)***	Days	0.5377 (0.000)***	Days	1.0022 (0.000)***	Days	0.5063 (0.000)***	Days	0.3263 (0.000)***	Days	0.4486 (0.000)***	People	-0.5768 (0.000)***
Wildlife	0.2134 (0.004)***	Sanim	0.2147 (0.049)**	Prov2	-2.743 (0.002)***	Pref	0.2820 (0.009)***	Family	0.4771 (0.000)***	Child	0.2303 (0.002)***	Visits	-0.15265 (0.004)***
Qual	0.1116 (0.315)	Prov2	-0.967 (0.093)*	Relax	0.5734 (0.011)**	Brand	-1.1590 (0.044)**	Edu	-0.1192 (0.377)	Friends	-0.1722 (0.005)***	Family	0.2139 (0.039)**
Family	0.1105 (0.104)	Routine	-0.1732 (0.311)	Hiking	0.2270 (0.082)*	Conf	0.1933 (0.1632)	Prov2	-0.1731 (0.002)**	Grewup	-0.0749 (0.192)	Pref	0.2503 (0.002)***
Explore	-0.1131 (0.150)	Age	0.2702 (0.249)	Animals	0.3755 (0.054)*	Family	-0.0340 (0.742)	Friends	-0.0638 (0.456)	Pref	0.2377 (0.023)**	Qual	0.2956 (0.008)***
Age	0.1671 (0.278)	Lang	-0.1891 (0.263)	Family	-0.1154 (0.509)	Grewup	0.0166 (0.796)	Qual	-0.2768 (0.034)**	Climate	0.1085 (0.149)	Acc	-1.323 (0.095)*
Marry	0.1671 (0.041)	Relax	-0.1972 (0.300)	Species	-0.3072 (0.173)	Plants	-0.0104 (0.929)	Pref	0.1515 (0.223)	Wildcard	0.2333 (0.080)***	Endanger	0.2838 (0.018)**
Sanim	0.0955 (0.224)	Endanger	0.0752 (0.588)	Wildlife	0.2884 (0.158)	Animals	0.2258 (0.196)	Relax	0.0354 (0.857)	Marry	-0.0491 (0.650)	Edu	-0.1257 (0.120)
Lang	-0.1168 (0.231)	Wildlife	-0.1549 (0.285)	Marry	0.2088 (0.173)	Endanger	-0.2519 (0.106)	Wildlife	-0.1436 (0.1918)	Relax	-0.0694 (0.5815)	Lang	-1.5453 (0.118)
Acc	0.0458	Species	0.1012	Age	0.2759	Climate	0.0853	Animals	-0.2077	Endanger	0.1887	Hiking	0.1917

Variable	Model 1	Variable	Model 2	Variable	Model 3	Variable	Model 4	Variable	Model 5	Variable	Model 6	Variable	Model 7
(constant)	(0.525)	(constant)	(0.479)	(constant)	(0.302)	(constant)	(0.3476)	(constant)	(0.257)	(constant)	(0.073)*	(constant)	(0.005)***
Hiking	-0.0655 (0.3677)	Child	0.0605 (0.622)	Pref	0.2340 (0.292)	Sanim	0.0804 (0.457)	Lang	-0.1841 (0.117)	Age	0.2220 (0.086)*	Conf	-0.2194 (0.050)**
Relax	-0.1174 (0.260)	Visits	-0.1372 (0.359)	Child	-0.1594 (0.292)	Child	-0.1574 (0.058)*	Plants	0.1377 (0.223)	Plants	-0.1198 (0.179)	Grewup	-0.0917 (0.122)
Routine	0.1032 (0.289)	Friends	-0.0377 (0.609)	Explore	0.1004 (0.540)	Routine	0.2321 (0.090)*	Photoa	-0.0970 (0.254)	Qual	0.1469 (0.175)	Species	0.0841 (0.3949)
Edu	-0.0468 (0.548)			Visits	0.1489 (0.367)	Lang	-0.1248 (0.253)			Visits	-0.0835 (0.381)	Photoa	0.0761 (0.311)
				Friends	0.0790 (0.560)	Acc	0.0766 (0.476)			Prov2	-0.0046 (0.916)	Plants	-1.4747 (0.103)
				Photoa	-0.1721 (0.220)	Age	-0.0459 (0.783)					Friends	-0.711 (0.277)
						Relax	-0.0098 (0.960)					Explore	0.0794 (0.225)
												Brand	0.0352 (0.575)
R-squared	0.46161	R-squared	0.24286	R-squared	0.46265	R-squared	0.33099	R-squared	0.33148	R-squared	0.27025	R-squared	0.32933
Adj R-squared	0.42143	Adj R-squared	0.19489	Adj R-squared	0.36335	Adj R-squared	0.26924	Adj R-squared	0.29643	Adj R-squared	0.23791	Adj R-squared	0.29928
F-stat	11.4890	F-stat	5.0634	F-stat	4.6594	F-stat	5.3598	F-stat	9.4568	F-stat	8.3559	F-stat	10.958
AIK	1.6223	AIK	2.1683	AIK	2.2375	AIK	1.8702	AIK	2.2359	AIK	2.1016	AIK	2.1535
SC	1.8715	SC	2.2571	SC	2.6794	SC	2.1691	SC	2.3136	SC	2.2786	SC	2.3380

Values in ( ) = probabilities; *** = significant at 1% level; ** = significant at 5% level; * = significant at 10% level

In summary, the common themes for motivational factors that influence spending positively are those relating to "animals" and "relaxing with family and friends".

4.2 Pseudo-panel results

In the pseudo-panel analysis, only the variables that are available for all the years can be considered, which means that the following variables are omitted from this section: PREF, WILDCARD, CONF, EVENTS. The same procedure was followed as with the cross-sectional analysis and a stepwise regression was firstly estimated. The results of the stepwise regression are indicated in Table 5. The results show that the only behavioural indicator that is significant over all the years and age groups is the number of people in the travel party. It is interesting that almost all the socio-demographic variables (PROV, LANG, MARRY) are also identified as variables that influence spending per person over the period. A number of motivational factors are also significant variables that influence spending per person in different age cohorts[2].

The BPG tests[3] were again performed to identify the extent of heteroskedasticity present. The results of the tests are indicated in Table 6. It can be seen that the null hypothesis of no heteroskedasticity is not rejected by the scaled explained sum of squares statistic of the BPG test.

Table 5
Panel stepwise results

Dependent variable: LSPENDPP				
Method: Stepwise regression				
Sample: 2001 2007				
Included observations: 34				
Selection method: Stepwise forwards				
Stopping criterion: p-value forwards/backwards = 0.5/0.5				
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.***
C	3.158181	1.095782	2.882126	0.0095
LMARRY	–2.382915	0.425605	–5.598892	0.0000
LHIKING	–1.576124	0.445931	–3.534462	0.0022
LLANG	2.243684	0.766684	2.926478	0.0087
LPEOPLE	–1.312720	0.257352	–5.100872	0.0001
LPROV	–1.512116	0.498327	–3.034388	0.0068
LGREWUP	3.242930	0.499728	6.489385	0.0000
LEXPLORE	2.793740	0.651894	4.285574	0.0004
LPLANTS	1.375488	0.689947	1.993614	0.0608
LCLIMATE	–0.582872	0.509736	–1.143478	0.2670
LWILDLIFE	2.036312	0.640443	3.179537	0.0049
LSANIM	–1.679450	1.135891	–1.478531	0.1557
LBRAND	0.893693	0.574398	1.555878	0.1362
LPHOTOP	–1.385645	0.882639	–1.569888	0.1329
LEDU	0.554691	0.769295	0.721039	0.4797

R-squared	0.884850	Mean dependent var	7.768076
Adjusted R-squared	0.800002	S.D. dependent var	0.555166
S.E. of regression	0.248276	Akaike info criterion	0.351881
Sum squared resid	1.171179	Schwarz criterion	1.025275
Log likelihood	9.018026	Hannan-Quinn criter.	0.581528
F-statistic	10.42871	Durbin-Watson stat	2.101617
Prob(F-statistic)	0.000004		

Table 6
Results of the heteroskedasticity tests

BREUSCH-PAGAN-GODFREY TEST			
F-statistic	0.584647	Prob. F(15,19)	0.8452
Obs*R-squared	10.23694	Prob. Chi-Square(15)	0.7447
Scaled explained SS	3.980620	Prob. Chi-Square(15)	0.9956

The regression was re-estimated, using the variables identified in the stepwise regression and fixed effects were included to control for group differences. The results are indicated in Table 7.

From the results it is evident that the behavioural indicator – the number of people travelling together – is again highly significant. Spending per person declines as more people travel together. Language has a significant impact on spending, with people speaking Afrikaans and languages other than English, spending more while visiting the Kruger National Park. The other socio-demographic variable that is moderately significant is the marital status of respondents, with married people spending less per person. It is interesting to note that the province of residence is identified as a factor that influences spending, but that the influence is not significant when the respondents are grouped into age cohorts (as is the case in the pseudo-panel estimates).

Only three motivational factors have a significant influence on spending. For two of these factors, an increase in importance of the factor is associated with increased spending per person. The only exception is hiking, which might be an indication that hiking is rarely an important motivational factor for visitors to the Kruger National Park. This might be due to the fact that hiking in the Park is only allowed with a qualified field guide and is still viewed as a dangerous activity. The two motivational factors that positively influence spending over age groups are to explore a new destination and because many domestic tourists grew up visiting the Park.

Table 7
Pseudo-panel regression results

	Coefficient	Std. Error	t-Statistic	Prob.
Dependent variable: LSPENDPP				
Method: Panel least squares				
Sample: 2001 2007				
Periods included: 7				
Cross-sections included: 5				
Total panel (unbalanced) observations: 34				
C	4.122698	1.583060	2.604259	0.0199
LMARRY	−1.455279	0.789396	−1.843535	0.0851
LHIKING	−1.285661	0.494102	−2.602013	0.0200
LLANG	2.238657	0.802389	2.789989	0.0137
LPEOPLE	−1.251590	0.312076	−4.010524	0.0011
LPROV	−0.927237	0.657809	−1.409584	0.1791
LGREWUP	2.027061	0.910164	2.227137	0.0417
LEXPLORE	1.889142	0.963226	1.961266	0.0687
LPLANTS	0.719376	0.835629	0.860879	0.4029
LCLIMATE	−0.148543	0.899634	−0.165114	0.8711
LWILDLIFE	1.156147	1.161113	0.995723	0.3352
LSANIM	−0.572109	1.608562	−0.355665	0.7270
LBRAND	0.403727	0.799216	0.505154	0.6208
LPHOTOP	−1.309600	1.146514	−1.142245	0.2713
LEDU	0.938191	0.967108	0.970100	0.3474
Cross-section fixed (dummy variables)				
1				−0.307900
2				−0.118330
3				0.051092
4				0.198470
5				0.183968
R-squared	0.902574	Mean dependent var		7.768076
Adjusted R-squared	0.785663	S.D. dependent var		0.555166
S.E. of regression	0.257023	Akaike info criterion		0.420032
Sum squared resid	0.990910	Schwarz criterion		1.272998
Log likelihood	11.85945	Hannan-Quinn criter.		0.710918
F-statistic	7.720158	Durbin-Watson stat		1.552887
Prob(F-statistic)	0.000117			

4.3 Implications

The results of the analysis indicate that a combination of demographic, behavioural and motivational factors influence spending at the Kruger National Park. A comparison of the cross-sectional and pseudo-panel results reveals the following:

Firstly, the behavioural indicators are the most significant in all the analyses. These include the number of days spent at the Park, the number of people in the group, frequency of visits, and catering preferences. An interesting finding is that the increase in the number of people leads to a decrease in spending per person. In this regard, this research contradicts research findings by Skuras et al. (2005), and supports the results of Downward and Lumsdon (2003). A reason might be that the Kruger National Park is a family destination and that costs are shared between family members staying in one accommodation unit. With regard to the frequency of visits, this study supports the research by Opperman (1996) and contradicts the findings of Gyte and Phelps (1998) and Jang et al. (2004) who found that repeat visitors spend more. The results are not convincing everywhere since, in many cases, the number of visits is not significant. It is also noteworthy that people with more elaborate catering needs tend to spend more, even when staying in self-catering units. This might be due to more frequent spending at restaurants by such individuals.

Secondly, the socio-demographic variables that influence spending per person include the province of residence, qualification, age, language and marital status of the visitors. Of these variables province of residence, qualification and age are more often significant for spending at the Kruger National Park. Saayman and Saayman (2006) had similar findings with regard to visitors to arts festivals in South Africa. Province of residence can be viewed as a weak proxy for income, since income is not included as a separate question in the questionnaire. The reason for not including the question is that income is a sensitive issue and visitors are seldom willing to divulge such information.

It is therefore not surprising that the sign is negative, indicating that visitors originating from the richer provinces (especially Gauteng and Western Cape) tend to spend more. While the age of the respondent is often chosen by the stepwise regression as a factor to include, it is seldom significant. This is an interesting result since, in most other research on spending behaviour, it is found that older people tend to spend more (refer, for example, to Saayman and Saayman, 2006; van der Merwe et al., 2006 and Letho et al., 2004). When the respondents are grouped into age cohorts, language becomes a significant factor that influences spending at Kruger National Park. Language is often found to have a significant influence on spending in South Africa (refer to Saayman and Saayman, 2006 & Van der Merwe et al., 2006), which indicates that expenditure segmentation based on language as the main variable is possible.

Thirdly, the motivation factors that are the most significant in the analyses are to explore a new destination, to spend time with family, those aspects relating to wildlife and because tourists grew up visiting the Park. The latter confirms research by Saayman and Van der Merwe (2008), where they highlighted the importance of nostalgia as a main travel motive for tourists to the Kruger National Park. The Kruger National Park is not only the oldest National Park in South Africa, but also the most-renowned and the results imply that marketers should focus on this aspect in their marketing campaign in order to attract high-spending tourists.

With regard to exploring new destinations as a travel motive, one should keep in mind that the size and variety that the Park offers might not allude to first-time visitors only. Therefore this aspect also includes seeing new products and attractions, such as new types of accommodation, different species of plants and animals, new trails or new camps. In order to experience all these aspects offered by the Park, one has to travel greater distances (the Park is larger than the State of Israel) since certain species (which are again important for visitors), for example, are only found in certain habitat in the Park – and thus tourists need to stay longer and spend more.

The article makes a contribution to:

i.   Understanding the spending behaviour of visitors to National Parks – which is the first of its kind in South Africa.

ii.   Expand previous research on spending behaviour in South Africa by including various motivational factors in the analyses. An interesting finding that confirms previous research conducted in South Africa on socio-demographic determinants of hunting and events is that language is a determinant of tourist spending.

iii. Support the findings of previous research in that a combination of factors influences the spending decision. Yet the results also contradict some of the findings referred to in the literature review. The results of this article confirm that the influence of socio-demographics and behavioural determinants on spending differs from one tourism product to another, thereby highlighting the need for more research in this area.

iv.   Expanding the model developed by Lu and Pas (1999) to include tourist spending and psychological factors (most notably, motivations). The importance of the latter lies in the notion that all owners of privately-owned tourist products, and in some cases even state-owned tourist products, focus on improving profitability earned from their enterprise, which can only be achieved through increased tourist spending. This adapted model (see Figure 1) and research findings could assist marketers and park management alike in better understanding tourists visiting the Kruger National Park and increasing tourist spending in the Park and region in particular, to maximise the benefits from tourism.

5
Conclusion

The purpose of this article is to determine the extent to which socio-demographic and behavioural indicators influence the spending of tourists to the Kruger National Park. The literature review indicates that motivational factors are viewed as socio-demographic factors, and are thus included in this research under a separate category.

The results of this article confirm that it is a combination of socio-demographic, behavioural and motivational factors that influence the spending decision. From a marketing policy point of view, this research indicates the following: Firstly that, with regard to the Kruger National Park, the focus should be on promoting new products and experiences that the Park has to offer (including endangered species and the Big Five). Hence, product development should address opportunities – in terms of facilities and activities – for tourists to relax with their families and to enjoy the variety of animals that the Park has to offer. These include new or upgraded accommodation, camps, restaurants, recreational facilities (especially for children), new game and plant viewing routes or areas that are not travelled that often. Added to this, the Park should make South Africans aware of the fact that this Park is part of our heritage and that one should visit it again to relive past experiences (nostalgia) and create new experiences (also for future generations).

Secondly, that marketing should focus on the two richer provinces (Gauteng and Western Cape) if the purpose is to increase spending in the Park. Thirdly, the results indicate that the Wildcard had a negative impact on spending per person during 2006. Yet this negative impact has diluted in 2007, where the Wildcard had no influence on spending. The results of the article indicate that people with Wildcards have adapted their spending patterns and spend more on other items in the Park, due to the saving on the conservation fee.

Based on the results of this research, further research to be conducted could include similar studies in other major National Parks in South Africa and the rest of Africa as well as abroad to compare and verify results.

Endnotes

the surveys and support and information provided on various aspects. Thanks also for the valuable comments received from the audience at the International Association for Tourism Economics conference, in Palma.

2. It should be noted that the pseudo-panel regressions were firstly performed using the weighted variables as suggested by Matas and Raymond (2007), but that this led to extreme multicollinearity between all the regressors, which rendered the results biased. Therefore, the weights were disregarded and all results reported are thus not weighted

3. The White Test could not be performed due to too few observations caused by the averaging of the group data

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Appendix A

Table A1
Questions used and their description

Category	Question description	Variable
Socio-demographic	Home language: English = 1; Afrikaans = 2; Other = 3	LANG
	Age: <19 = 1; 20-24 = 2; 25-34 = 3; 35-49 = 4; 50-64 = 5; 65+ = 6	AGE
	Marital status: Married = 1; unmarried = 2; divorced = 3; widow/er = 4; living together = 5	MARRY
	Residing Province: Gauteng = 1; Western Cape = 2; Northern Cape = 3; Mpumalanga = 4; North West = 5; KwaZulu-Natal = 6; Free State = 7; Eastern Cape = 8; Limpopo = 9; Non-SA = 0.	PROV2
	Highest Qualification: No school = 1; Matric = 2; Diploma/Degree = 3; Post-grad = 4; Professional = 5; Other = 6	QUAL
Behavioural	Group size (fill in)	PEOPLE
	Number of visits to National Parks over the past 3 years (fill in)	VISITS
	Number of nights (fill in)	DAYS
	Wildcard: (only 2006-2007) Yes = 1; No = 2	WILDCARD
	Preference for catering: (only 2004–2007) Self-catering = 1; Dine out & self-catering = 2; B&B = 3; Dinner, bed & breakfast = 4	PREF

Motivational	Scale the importance of the reasons of visiting the Park from 1 to 5 (1 = not important; 5 = very important):	
	To get away from my regular routine	ROUTINE
	To relax	RELAX
	To explore a new destination	EXPLORE
	To spend time with friends	FRIENDS
	For the benefit of my children	CHILD
	For family recreation	FAMILY
	To learn about wildlife	WILDLIFE
	To develop appreciation for endangered species	ENDANGER
	For educational reasons (increase knowledge)	EDU
	To learn about animals in general	ANIMALS
	To learn about endangered species	SPECIES
	To learn about plants	PLANTS
	To learn about specific animals	SANIM
	To photograph animals	PHOTOA
	To photograph plants	PHOTOP
	Because I grew up with the park	GREWUP
	It is a well-known brand	BRAND
	The Park has great accommodation facilities	ACC
	I prefer this area, because of the climate	CLIMATE
	To do the hiking trails	HIKING
	For conferences (only since 2003)	CONF
	For events in the area (only since 2003)	EVENTS