INTERNATIONAL JOURNAL OF TOURISM RESEARCH
Int. J. Tourism Res. **14**, 124–138 (2012)
Published online 27 March 2011 in Wiley Online Library
(wileyonlinelibrary.com) **DOI:** 10.1002/jtr.841

Determinants of Spending: an Evaluation of Three Major Sporting Events

Melville Saayman[1] and Andrea Saayman[2,*]
[1]*North-West University, Institute for Tourism and Leisure Studies, Potchefstroom, South Africa*
[2]*North-West University, School of Economics, Potchefstroom, South Africa*

ABSTRACT

South Africa plays host to a number of major sporting events that takes place annually such as the Two Oceans Marathon, the Argus Cycle Tour and the Midmar open water mile. This research aims to identify the socio-economic differences of participants in the events and to determine the key drivers of their spending. Three surveys were conducted at the events during 2008 and 2010. The data analyses include a factor and a regression analyses. The analyses identified the different motives why participation takes place, the socio-demographic differences between participants and the impact thereof on spending. Copyright © 2011 John Wiley & Sons, Ltd.

Received 18 October 2010; Revised 4 February 2011; Accepted 16 February 2011

Keywords: sporting events; socio-demographics; motives; factor analysis; regression analysis.

INTRODUCTION

In South Africa, the number of events, specifically sporting events, has increased. The increase in sporting events is due to several reasons. Globally, there is a greater emphasis on personal physical fitness and well-being, attracting more people. As a result, events are seen as a means to achieve specific objectives e.g. to raise funds for charity or for other causes. Destinations can also use events to create a specific image, to attract people to a region/destination, to address seasonal fluctuations and to generate revenue (Saayman and Rossouw, 2010).

Most events in the country are dependent on revenue from sponsorships; the sponsors and local government want to know the event's economic impact, and how the event is benefiting local communities. Since visitor or participant spending influence the magnitude of the impact (Frechtling, 2006), event organizers need to have a greater understanding of participants' spending behaviour.

Sport events and sport tourism may have become big business, but very little is known about the determinants of participants' spending in particular at sport events (Streicher, 2009). Understanding these determinants will give organizers a more comprehensive view of the variables that influence participants' spending. Organizers will be able to use the information for various purposes including planning and marketing. This information is also paramount for the sustainable growth of an event (Kruger, 2009).

To identify the determinants of spending of participants (competitors), research was carried out at three major annual sporting events in South Africa: the Pick n Pay Argus Cycle Tour, the Two Oceans Marathon and the Midmar Swimming Mile.

The Pick n Pay Argus Cycle Tour (hereafter referred to as the Argus) started in 1977 with the intention of drawing attention to the need for cycle paths in Cape Town. Today, the event attracts more than 32 000 participants from across the globe and is the largest cycling event in South Africa (Saayman *et al.*, 2008).

The Telkom Midmar Mile (hereafter the Midmar Mile) is the largest open-water swimming event in the world and attracts

*Correspondence to: A. Saayman, North-West University, School of Economics, Potchefstroom, South Africa.
E-mail: andrea.saayman@nwu.ac.za

approximately 14 000 participants. The event started in 1973 when three friends decided to host a local swimming event because of petrol restrictions during the fuel crisis. The event, held over 2 days, caters for different categories of swimmers (Botha *et al.*, 2010).

The Old Mutual Two Oceans Marathon (hereafter the Two Oceans) has earned the reputation as the world's most beautiful marathon due to its location in Cape Town. The event started in 1970 and attracts approximately 26 000 participants in the different categories and takes place over a period of one day (Kruger *et al.*, 2010).

LITERATURE REVIEW

Identifying the determinants of spending is a useful tool for understanding expenditure patterns and ascertaining market segments (Jang *et al.*, 2004). A greater understanding of visitor-expenditure patterns can help event organizers increase the economic impact of events (Saayman *et al.*, 2007), which is especially important for sporting events, since one of the goals of most sporting events is to make a positive economic contribution to the area where the event takes place. However, a range of socio-demographic and behavioural determinants influence visitor expenditure, which makes it more complex from an event organizer's perspective (Craggs and Schofield, 2006). Visitor expenditure is one of the most critical variables of analysis for tourist destinations, since it directly determines the tourism sector's profitability (Frechtling, 2006). Indeed, tourist expenditure is the clearest identification of the economic benefits and the most important contributor for an area (Mottiar, 2006).

Identifying the determinants of spending is important for the following reasons (Saayman and Saayman, 2006; Wilton and Nickerson, 2006; Kruger, 2009).

(1) It gives organizers a greater understanding of spending behaviour.
(2) It helps with event policy formulation.
(3) It allows high-yielding markets to be identified.
(4) It helps with strategy planning and marketing, including niche marketing.
(5) It informs product development.
(6) It can give organizers a competitive advantage.
(7) It helps develop a customized event programme that can assist in the allocation of financial resources, especially for marketing.

Therefore, the determinants of spending could assist event organizers in using scarce resources effectively and efficiently. Adding to the problem, studies indicated above found that the determinants of expenditure differ from event to event or from one attraction to the next, which is further explored in this research. However, the most common variables identified in visitor-expenditure research are shown in Figure 1 and form part of this research as well.

An analysis of the literature found that this aspect has been grossly neglected in the field of

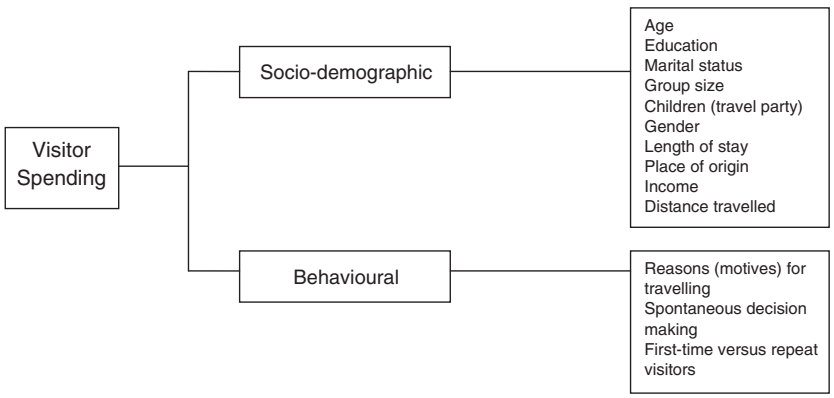

Figure 1. Key determinants in events Source: Saayman and Krugell, 2010.

DOI: 10.1002/jtr

sport events and that most of the research has been conducted in other areas of event management. The literature review also indicated that the effects of certain socio-demographic variables (see Figure 1) were inconclusive. One of these was age, which some researchers found had a positive relationship (Mok and Iverson, 2000; Thrane, 2002; Saayman and Saayman, 2006; Kruger, 2009; Saayman and Krugell, 2010), whereas others found the opposite (Pouta *et al.*, 2006; Mehmetoglu, 2007). The same applied for group size, which Mak *et al.* (1977), Thrane (2002), Seiler *et al.* (2002) and Lee (2001) found had a positive relationship, but Saayman and Saayman (2008) found the opposite. The effect of marital status was found to be inconclusive (Saayman *et al.*, 2007), as was the impact of gender: research found the higher spenders to be both men (Thrane, 2002) and women (Letho *et al.*, 2004; Craggs and Schofield, 2006). However, more-educated respondents spend less at events (Mak *et al.*, 1977; Gokovali *et al.*, 2007; Saayman *et al.*, 2007).

Contrary to common belief, children in the travel party had a negative impact (Cai *et al.*, 1995; Cannon and Ford, 2002; Saayman and Saayman, 2006), whereas Lee (2001) found that children in the travel party had no significant impact on spending.

Socio-demographic variables that had a positive effect on spending included: length of stay (Nogawa *et al.*, 1996; Seiler *et al.*, 2002; Saayman *et al.*, 2007; Kruger, 2009; Saayman and Krugell, 2010); place of origin (Cannon and Ford, 2002; Downward and Lumdson, 2002; Skuras *et al.*, 2005; Saayman and Saayman, 2008; Kruger, 2009; Streicher, 2009; Saayman *et al.*, 2011); income (Saayman *et al.*, 2007); and distance travelled, regardless of whether or not the expenditure for travelling was omitted (Saayman *et al.*, 2007; Cannon and Ford, 2002).

The reasons for travelling or participating played a key role and had a significant impact on spending (Mok and Iverson, 2000; Letho *et al.*, 2004; Kruger *et al.*, 2009; Saayman and Krugell, 2010). Those who decided well in advance to attend or participate spent more (Thrane, 2002; Saayman and Saayman, 2006). Most research found that first-time visitors also spent more, compared with repeat visitors (Oppermann, 1997; Jang *et al.*, 2004; Pouta *et al.*, 2006), although Gyte and Phelps (1998), Long and Purdue (1990) and Saayman and Krugell (2010) found the opposite.

METHOD OF RESEARCH

Questionnaire and sample

Research was conducted using a questionnaire that was distributed by fieldworkers to participants at the three events. The questionnaire was based on research by Schneider and Backman (1996), Lee *et al.* (2004), Kim *et al.* (2006) and LaChausse (2006) and consisted of three sections: section A captured demographic details, section B focused on spending behaviour, whereas section C determined the motivational factors.

Sampling was based on the willingness and the availability of participants to complete the questionnaires (Table 1). The sample size was determined according to the guidelines by Cooper and Emory (1995, p. 207), who indicated that a sample size (S) of 384 is sufficient for a population (N) of 100 000 – 384/100 000 = 0.00384. Since all three events attract significantly fewer participants, sample sizes greater than 384 were obtained in order to ensure that the information gathered (fully completed questionnaires) was sufficient.

To minimize bias, the sample size was divided by the number of days, which gave the fieldworkers their daily target.

Data collection

At each of the events, the fieldworkers followed the same procedure. They approached participants and asked them if they were willing to complete the questionnaire. Those who indicated their willingness were then given a questionnaire, which they completed during the registration process.

The Argus survey took place in the City of Cape Town at the Good Hope Centre, in the registration hall, from 5 to 8 March 2008. A total of 32 000 entries formed the sample population. The questionnaires were distributed by the fieldworkers in the registration hall before participating cyclists entered the expo area. Of these questionnaires, 583 were properly completed and subsequently analysed. The Two Oceans survey was also conducted

DOI: 10.1002/jtr

at the Good Hope Centre, in the registration hall, from 30 March to 2 April 2010. 450 questionnaires were distributed of which 442 were fully completed. The Midmar Mile survey was conducted at the registration desk at the Midlands Mall from 10 to 12 February 2010. 500 questionnaires were distributed of which 462 were used for data analysis.

Variables

The dependent variable used in the analysis was spending per person (spendpp), excluding transport cost. This variable was continuous and was calculated by summing the amounts spent on various expenditure items listed in the questionnaire and by dividing the sum by the number of people for whom the respondent is paying (also asked in the questionnaire). Transport costs were excluded since they could potentially cause bias in spending, as people living further away from the event would spend more money to reach the event.

The independent variables used in the analyses included the following.

(1) Age of the respondent, which was also a continuous variable, except in the Argus questionnaire where there were age categories, and was interpreted thus: Age 1, younger than 25 years; Age 2, between the ages of 25 and 34 years; Age 3, between the ages of 35 and 49 years; Age 4, older than 50. Age 1 is used as the reference group. It was expected that older people spend more, since they have higher income than younger persons.

(2) Gender was a dichotomous variable and was coded as follows:

$$Gender = \begin{cases} 1 \text{ if female} \\ 0 \text{ if male} \end{cases}.$$

(3) Marital status of the respondent, where 1 indicates married and 0 if otherwise.

(4) Education was again a dummy variable with three categories: edu1 indicated that the respondent had school education or less; edu2 represented respondent with a degree or diploma; whereas edu3 referred to respondents with post-graduate and professional training. Since income is a sensitive question to include in a questionnaire, education was used as a weak proxy for income, and a positive relationship between spending and education was therefore expected.

(5) Language of the respondent was included to test for cultural differences in spending. In general, the largest category of respondents was English-speaking, and therefore, an English dummy was included where 1 indicates an English-speaking person and 0 if otherwise.

(6) Foreigners were also included separately with a dummy variable coded

$$Foreign = \begin{cases} 1 \text{ if foreigner} \\ 0 \text{ if otherwise} \end{cases}.$$

(7) The province in which respondents reside was also included as a dummy variable.

Table 1. Event sampling

Event	Argus Cycle Tour	Two Oceans Marathon	Midmar Swimming Marathon
Number of participants	32 000	26 000	14 000
Sample size: questionnaires handed out	600	450	500
Sample size: questionnaires received	583	442	462
Date and place of survey	5–8 March 2008 Registration Hall Good Hope Centre	30 March 2010–2 April 2010 Registration Hall Good Hope Centre	10–12 February 2010 Registration desk Midlands Mall

Source: Compiled by authors.

DOI: 10.1002/jtr

Specifically, the province in which the event takes place was controlled for because respondents from the province should be able to save on accommodation cost. A Western Cape dummy was included for both the Argus and the Two Oceans (where these events took place), whereas a KwaZulu-Natal dummy was included for the Midmar Mile (the province where the Midmar dam is situated). In each case, the variable was coded as follows: 1 = province of even; 0 = other. In addition, a Gauteng province dummy was also included, as a large portion of each event's participants were from Gauteng (i.e. Gauteng = 1; all other provinces = 0).

(8) The size of the travel group (group) was also included as a variable, since travelling in larger groups may cause the per person cost to decline due to sharing.

(9) The number of times that the respondent has participated in the event (times) was also included in the analysis, since most studies showed that first timers tend to spend more than repeat visitors. A negative relationship was therefore expected.

(10) The number of nights spent at the event (nights) was expected to be positively related to spending, since staying longer in the area should increase spending.

(11) The category in which the participant takes place was included as separate dummy variables. The categories differed for each event. For the Argus, licensed riders were captured in a dummy variable (professional) relative to the fun riders. There were two dummy variables for the Two Oceans – one for runners in the ultramarathon group (ultra) and one for runners in the half-marathon group (half), with fun runners serving as the base. For the Midmar Mile, swimmers in the Ironman and biathlon categories were tested against those in the fun categories with a dummy variable named 'Iron'. It was expected that the more serious or professional participant would spend more money at the event.

(12) Finally, some motivational questions were included in the questionnaire, which were answered on a 5-point Likert scale, where 1 = not important at all, and 5 = extremely important.

Data analysis

The data were captured in Microsoft Excel, and the statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS 16.0; SPSS Inc., Chicago, IL) as well as EViews 7 (Quantitative Micro Software, LLC, Irvine, CA) for the various regressions (explained below).

In order to reduce the number of parameters, the motivational statements, which were answered on a Likert scale, were subjected to a factor analysis in SPSS. For all three events, Bartlett's test of sphericity was significant, and the Kaiser–Meyer–Olkin measure of sample adequacy was well above 0.8, indicating some relationships between the statements; therefore, a factor analysis was warranted (Field, 2005, p. 652). To ensure a complete data set, only respondents who answered at least two-thirds of the motivational questions were included in the factor analysis, and missing values were replaced with mean values. The final number of respondents used was 465 for the Argus, 374 for the Two Oceans and 372 for the Midmar Mile.

The factors for the three events were extracted using a principal component method with rotation. The factor scores were then calculated using the Anderson–Rubin method in order to produce factor scores that are uncorrelated and standardized (Field, 2005, p. 628), since these factor scores feed into the regression models.

The regression analysis aimed to determine the extent to which the different socio-demographical, behavioural and motivational variables influence spending at each event. First, a stepwise regression was performed, to identify the variables that best explain the variance in spending per person. The results of the stepwise regression indicated the *mean value* of the dependent variable for a given set of independent variables – thus, it explained the conditional mean of spending per person. The errors were tested for heteroskedasticity, using White's test and where necessary the estimations were performed again using White's heteroskedastic-consistent errors.

However, a more comprehensive picture can be obtained on the relationship between these

DOI: 10.1002/jtr

identified variables and spending per person by using quantile regressions. In quantile regressions, differences between how low-spending respondents react relative to high-spending respondents become more apparent. The coefficient obtained thus indicates how some quantile (or percentile) of respondents react to changes in the independent variables (Cornell University, 2007). The data were therefore ranked from low to high based on the values of the dependent variable.

Quantile regressions estimate the linear relationship between a number of independent variables and a certain quantile (or percentile) of the dependent variable e.g. the median (50th percentile), 25th percentile or 95th percentile. It therefore offers a robust method of modelling relationships without the strict distributional assumptions (QMS, 2007, p. 259). The regressions were performed in EViews 7, which uses the simplex algorithm to solve the linear programming problem and obtain the coefficients (QMS, 2007, p. 271). The goodness of fit is measured by the pseudo *R*-squared, which is analogous to the conventional *R*-squared (QMS, 2007, p. 278).

RESULTS

Factor analyses results

For the Argus, the five factors explain 62% of the variance, and all have eigenvalues greater than 0 (Table 2). Streicher and Saayman (2010) also identified these five motivational factors for the Argus, and so the same labels are used:

Table 2. Factor analysis results of Argus Cycle Tour

Motives for participation	Factor				
	1	2	3	4	5
	Personal motivation	Event attractiveness	Escape and relaxation	Socialization	Event-specific attributes
Level of difficulty	0.458				
Level of fitness	0.721				
Major challenge	0.744				
Discover & evaluate myself	0.741				
Self-confidence	0.764				
Atmosphere		0.767			
Well organized		0.775			
Enjoy cycling		0.784			
Type of events		0.524			
Annually		0.538			
Get away			0.721		
New area			0.781		
Do something with friends			0.728		
Scenic route			0.456		
Family recreation				0.610	
After-event tours				0.437	
Family can participate				0.773	
Had to participate				0.527	
Reason to visit Cape Town				0.499	
Live in Cape Town					0.819
International event					0.712
Major event					0.532

Source: Compiled by authors from survey data and SPSS.

DOI: 10.1002/jtr

Table 3. Factor analysis results for the Two Oceans Marathon

Motives for participation	Factor			
	1	2	3	4
	Personal motivation	Event attractiveness	Relaxation & socialization	Escape & explore
Enjoy running	0.673			
Major challenge	0.805			
Well organized	0.635			
Test level of fitness and endurance	0.669			
Compete against myself	0.560			
Atmosphere	0.527			
Proud of myself	0.811			
Must do event	0.543			
Improve health	0.598			
Meet new people		0.700		
Socialize with other runners		0.763		
Compete against others		0.694		
International event		0.526		
Share group identity		0.535		
Pursuing a personal goal		0.445		
Do it annually		0.564		
To get away			0.613	
Relax			0.601	
Spend time with family			0.709	
Spend time with friends			0.626	
Whole family can participate			0.571	
Family and friends proud				0.459
Reason to visit Cape Town				0.762
Explore new area				0.827

Source: Compiled by authors from survey data and SPSS.

factor 1 – personal motivational factors; factor 2 – event attractiveness; factor 3 – motives of escape and relaxation; factor 4 – socialization motive; and factor 5 – event-specific attributes.

The four factors identified for the Two Oceans explain 55.6% of the variance, and all have eigenvalues greater than 1 (Table 3). The factors are very similar to those of the Argus Cycle Tour. On basis of the Argus factors, the motivational factors for participating in the Two Oceans are labelled: factor 1 – personal motivational factors; factor 2 – event attractiveness; factor 3 – motives of relaxation and socialization; and factor 4 – escape and explore motives.

For the Midmar Mile, the three factors identified explain 51% of the total variance, and all have eigenvalues greater than 1 (Table 4). The factors identified concur with research by Saayman *et al.* (2010) and can be labelled as follows: factor 1 – motives of socialization and escape; factor 2 – event-specific attributes; and factor 3 – personal motivational factors.

Regression results

Table 5 shows the results of the regression analysis for the Argus. The results of both the stepwise (mean) regression analysis and the various quantile regressions – 25%, 50% (median), 0.75% and 95% - are shown.

The results of the stepwise regression show that participants' spending behaviour at the Argus is influenced by a mixture of socio-demographic, behavioural and motivational factors. Age and education level play a

DOI: 10.1002/jtr

paramount role: persons older than 35 years (age groups 3 and 4) spend significantly more than those younger than 25 years, and persons with post-graduate and professional education (edu3) spend significantly more than persons with only school education (edu1). English-speaking participants also spend more than their counterparts. The effect of gender and marital status is not significant.

Professional cyclists and participants who stay longer (nights spent) spend more money, whereas the spending per person decreases significantly as the size of the travel group increases, indicating that participants share costs. Three motivational factors have a positive influence on spending: socialization (factor 4), event-specific attributes (factor 5) and event attractiveness (factor 2). The influence of factor 4 is significant, as it indicates that cyclists, who treat the event as a family outing or an opportunity to visit and tour the area, tend to spend more per person.

For the low-spending quantile (25%), the only factors that influence spending significantly are group size and province of residence. Thus, low spenders living in Gauteng tend to spend more than those living in other provinces, whereas cyclists travelling in larger groups tend to spend less per person than cyclists in smaller groups. Even the median regression identifies the strong effect that province of origin (and especially Gauteng) has on spending per person, and the mean regression thus underestimates the influence of province of residence on spending behaviour. In the median regression, age, nights spent at the event and socialization, motives have a significant effect on spending per person. Only when higher-spending segments of the sample is included (75% and 95%), age becomes a

Table 4. Factor analysis results for the Midmar Mile

Motives for participation	Factor		
	1	2	3
	Socialization & escape	Event-specific attributes	Personal motivation
To get away from routine	0.576		
To relax	0.688		
To spend time with family	0.734		
To spend time with friends	0.705		
To meet new people	0.549		
It is a sociable event	0.627		
Because the whole family can participate	0.628		
The atmosphere of the Midmar Mile	0.515		
I must participate in order to qualify for the ironman/biathlon, etc.		0.448	
It is an international event		0.617	
Reason to visit KwaZulu-Natal		0.764	
To explore a new area		0.803	
I am participating as part of a corporate team		0.552	
To meet well-known personalities		0.761	
Because I enjoy swimming			0.571
It is a major challenge			0.705
Because the event is well organized			0.599
I do it annually			0.394
To test my endurance			0.669
The Midmar Mile tests my level of fitness and endurance			0.721
The Midmar Mile is a huge challenge			0.633

Source: Compiled by authors using survey data and SPSS.

DOI: 10.1002/jtr

discriminate factor and thus has a greater influence on spending per person in higher-spending categories. It is also interesting that the coefficients of 'nights' and 'group' are increasing as the percentiles increase, indicating towards the increasing importance of these variables on higher quantiles of spending per person. This is also true for factor 5 (event-specific attributes) where this motive tend to be stronger in increasing spending in higher quantiles.

The graphs in Appendix A illustrate the various estimates of the coefficients relative to each quantile. The solid black line shows the

Table 5. Regression results for the Argus Cycle Tour (dependent variable = spending per person)[a]

Variable	Coefficient				
	Mean	0.25	0.5 (median)	0.75	0.95
C	−369.5726	30.0804	−32.0852	−86.8683	364.9738
	[−1.087]	[0.330]	[−0.237]	[−0.614]	[1.236]
Nights	203.5783	19.72349	125.2353	202.4554	477.1547
	[2.640]***	[1.199]	[3.775]***	[6.591]***	[1.461]
Group	−28.70767	−9.48919	−16.1715	−21.7391	−40.2128
	[−4.094]***	[−1.821]*	[−2.306]**	[−5.924]***	[−3.918]***
Age3	625.1312	90.0459	226.6022	574.1022	965.6382
	[3.116]***	[0.996]	[1.958]*	[3.289]**	[1.783]*
Age4	515.2495	141.1542	289.5862	470.654	1801.691
	[2.657]***	[1.254]	[1.693]*	[2.023]**	[1.977]**
Professional	410.8931	114.2439	270.571	68.14503	1011.713
	[2.027]**	[1.011]	[1.514]	[0.361]	[0.939]
Factor 4	161.7049	31.55687	110.0673	112.4704	−71.3272
	[2.696]***	[0.814]	[1.945]*	[1.679]*	[−0.376]
English	253.8273	−80.6635	118.1518	306.9846	568.9427
	[1.822]*	[−1.109]	[1.164]	[2.435]**	[1.522]
Edu3	416.8504	39.52428	86.28328	386.8242	315.251
	[2.204]**	[0.418]	[0.669]	[1.846]*	[0.627]
Factor 2	94.53779	51.47505	51.02757	64.69376	−52.8722
	[1.378]	[1.379]	[1.136]	[0.856]	[−0.286]
Gauteng	209.4939	167.9711	375.0874	583.696	154.0935
	[1.232]	[1.820]*	[2.405]**	[3.700]***	[0.197]
Edu2	228.2218	18.82337	0.440992	121.7513	284.8836
	[1.522]	[0.233]	[0.004]	[0.695]	[0.615]
Factor 5	92.07046	−45.9888	5.890808	143.1478	247.8843
	[0.971]	[−1.228]	[0.105]	[2.180]**	[0.905]
Gender	−153.1153	61.07754	112.5211	21.07022	-485.078
	[−1.100]	[0.746]	[1.039]	[0.152]	[−1.394]
Marry	132.6756	45.17274	51.20371	178.4145	687.0022
	[0.812]	[0.531]	[0.439]	[1.166]	[1.155]
R^2	0.299009				
Adjusted R^2	0.274896				
Pseudo R^2		0.053774	0.150672	0.214716	0.262952
Quantile dependent variable		140	570	1537.50	3997
F-statistic	12.40047				
Quasi-LR statistic		41.438	132.2711	175.3579	96.49455
Prob (F/LR statistic)	<0.001	0.000152	<0.001	<0.001	<0.001

Source: Compiled by author using survey data and EViews 7.
[a]t-statistics in square brackets.
*10% level of significance.
**5% level of significance.
***1% level of significance.

DOI: 10.1002/jtr

mean regression estimate, whereas the blue line shows the estimate for each quantile. It is interesting to note that the mean regression overestimates the influence of two of the motivational factors as well as the high-education category as is evident from the position of the solid black line in the graphs.

The regression results for the Two Oceans are indicated in Table 6.

The results of the stepwise regression show clearly that a mixture of socio-demographic, behavioural and motivational factors influence the spending per person for marathon participants. Province of residence, gender and language have a significant influence on spending per person. Males and English-speaking persons tend to spend more as well as runners from Gauteng, whereas runners living in the Western Cape spend significantly less. Participants who stay longer (nights spent) spend more, but although group size is identified as a variable that explains variance in mean spending, the relationship is not significant. Both ultramarathon and half-marathon runners spend more than social runners, especially ultramarathon runners.

Escape and explore motives (factor 4) have a positive impact, whereas event attractiveness (factor 2) has a negative impact on spending per person. In the low-spending category (25th quantile), men who participate in the ultramarathon and have a high personal motivation (factor 1) tend to spend more than their counterparts. In the median regression, participating in the ultramarathon category and being a man become even more important for spending, with greater levels of significance and higher coefficients. Among the lower half of spenders, motivation (factor 2, event attractiveness; and factor 3, relaxation and socialization) plays an important role in influencing spending.

The variables 'age' and half-marathon participation become significant only in discriminating between higher-spending categories, and the negative relationship between spending and age is an interesting result. It is also interesting to note that the coefficient for gender and ultramarathon athletes increase with higher-spending categories, indicating an underestimation of their importance in the mean regression.

The regression results for the Midmar Mile are presented in Table 7.

For participants in the Midmar Mile, socio-demographic and behavioural variables have a more significant influence on spending than motivational factors. Women tend to spend more than men, as do those residing in Gauteng. Participants with high levels of education (post-graduate and professional) spend more, and this relationship becomes pronounced when the high-spending category is analysed (95th quantile). Married people tend to spend less per person, and this may again be attributed to cost sharing. Although age is significant in the mean equation, its influence on spending may be overstated, since its significance and coefficient decline when different quantiles are analysed. For the low-spending categories (25th and 50th quantiles), only province of residence has a significant positive relationship with spending per person, whereas the negative relationship between married and spending becomes more pronounced.

The impact of nights stay and group size is similar to the other events: participants who stay longer during the Midmar Mile event spend more, and the spending per person decreases as the group size increases. However, the influence of nights stay and group size on spending is overstated in the low-spenders group.

Factor 3 (personal motives) is the only motivational factor that influences spending per person at this event, especially in the higher-spending categories (75th and 95th quantiles), and therefore, the mean regression again understates the importance of this variable for spending.

FINDINGS AND IMPLICATIONS

First, although all three are endurance events, athletes' reasons for participating differ for each event. The cycling and running events have stronger similarities compared with the swimming event. This confirms the research by Streicher and Saayman (2010) and Saayman *et al.* (2010), which found that event managers cannot assume that what works for one event will work for another, or that athletes participate for the same reasons, even in similar types of events. Obviously, events with a larger participation base (cycling and running) attract participants with a wider variety of motives

DOI: 10.1002/jtr

Table 6. Regression results for the Two Oceans Marathon (dependent variable = spending per person)[a]

Variable	Coefficient				
	Mean	0.25	0.5 (median)	0.75	0.95
C	1059.34 [1.354]	669.68 [1.288]	816.451 [1.375]	714.0342 [0.734]	3976.948 [3.064]***
Western Cape	−839.887 [−2.086]**	−552.697 [−1.579]	−849.387 [−2.463]**	−1146.24 [−2.376]**	−178.626 [0.129]
Gauteng	901.3953 [2.965]***	323.5189 [1.011]	469.1022 [1.437]	857.1666 [1.455]	1966.527 [1.584]
Nights	135.7601 [2.4120]**	63.76223 [1.014]	120.1335 [2.210]**	129.3824 [1.215]	415.5211 [1.203]
Factor 4	384.4938 [2.752]***	90.7983 [0.918]	153.175 [1.332]	416.2725 [2.935]***	449.3618 [1.241]
English	624.9495 [2.534]**	227.1204 [1.349]	306.5884 [1.560]	485.0408 [1.791]*	564.2976 [0.957]
Gender	−677.151 [−2.877]***	−327.397 [−2.157]*	−391.862 [−2.191]**	−362.701 [−1.431]	−1307.78 [−2.306]**
Factor 2	−404.357 [−2.831]***	−149.351 [−1.515]	−191.639 [−1.635]*	−602.674 [−3.908]***	−371.064 [−1.213]
Ultra	1386.427 [2.284]**	656.9641 [2.023]*	1102.248 [2.896]***	1632.509 [2.555]**	2696.862 [3.464]***
Times	−57.5322 [−1.477]	−17.2028 [−0.460]	−60.3127 [−1.410]	−90.8708 [−3.018]***	−10.5204 [−0.212]
Factor 3	194.6088 [1.589]	112.0136 [1.422]	142.3504 [1.755]*	121.8898 [1.132]	699.8416 [2.931]***
Half	811.6052 [1.381]	215.3891 [0.746]	458.6846 [1.304]	923.7644 [1.495]	1587.574 [2.146]**
Group	34.97721 [1.216]	−5.8876 [−0.250]	35.22593 [0.76]	76.47636 [1.505]	49.85509 [1.057]
Marry	430.576 [1.639]	97.24048 [0.573]	128.9169 [0.620]	92.07667 [0.266]	640.419 [1.510]
Age	−16.5141 [−1.28]	−4.81078 [−0.606]	−1.66539 [−0.184]	13.4261 [0.906]	−76.2573 [−3.095]***
Factor 1	145.5597 [1.099]	163.2151 [1.776]*	174.6112 [1.538]	63.27284 [0.422]	129.1193 [0.408]
R^2	0.365094				
Adjusted R^2	0.332479				
Pseudo R^2		0.181273	0.257977	0.289129	0.37783
Quantile dependent var		400	1392	2989	6250
F-statistic	11.19406				
Quasi-LR statistic		105.5158	179.9036	177.7331	145.0787
Prob (F/LR-statistic)	<0.001	<0.001	<0.001	<0.001	<0.001

Source: Compiled by author using survey data and EViews 7.
[a]t-statistics in square brackets.
*10% level of significance.
**5% level of significance.
***1% level of significance.

than events with a smaller participation base, such as the swimming mile. The cycling event also has a much larger socialization and relaxation aspect than any of the other two events. The implication is that these motives can be used to distinguish one event from the rest and should form part of the promotional message.

Furthermore, event organizers who want to host events that attract large numbers of

DOI: 10.1002/jtr

Table 7. Regression results for the Midmar Mile (dependent variable = spending per person)[a]

Variable	Coefficient				
	Mean	0.25	0.5 (median)	0.75	0.95
C	−40.3751	−8.14075	169.5842	276.1743	321.1877
	[−0.216]	[−0.082]	[2.165]**	[2.380]**	[2.221]**
Gauteng	697.4057	333.3235	583.5015	723.6011	1897.125
	[3.345]***	[1.908]*	[4.772]***	[2.597]***	[1.149]
Nights	197.817	−14.567	38.30445	284.6687	787.9391
	[2.769]***	[−0.628]	[1.237]	[2.629]***	[2.309]**
Age	14.71462	3.214043	4.058381	4.25463	4.531078
	[2.723]***	[1.109]	[1.469]	[1.018]	[0.907]
Marry	−280.377	−41.1861	−123.448	42.17797	173.917
	[−1.905]*	[−0.601]	[−1.654]*	[0.345]	[1.087]
Foreign	996.134	−9.29238	−99.1181	2807.453	160.7676
	[0.917]	[−0.063]	[−0.578]	[4.614]***	[0.201]
Group	−42.2443	0.69311	−18.4662	−27.2594	−14.2024
	[−1.820]*	[0.055]	[−1.255]	[−1.276]	[−0.518]
Edu3	165.1961	30.99804	77.12838	53.3229	220.7768
	[1.408]	[0.579]	[1.232]	[0.557]	[1.876]*
Gender	74.85594	4.455165	1.257203	92.69167	363.847
	[1.397]	[0.064]	[0.061]	[2.847]***	[3.283]***
Factor 3	−3.94841	−15.7704	−8.96713	10.70992	112.5481
	[−0.068]	[−0.798]	[−0.370]	[0.302]	[2.057]**
R^2	0.247756				
Adjusted R^2	0.223227				
Pseudo R^2		0.02494	0.12465	0.23398	0.409118
Quantile dependent var		90	300	725	2810
F-statistic	10.10027				
Quasi-LR statistic		14.20736	100.6024	180.3554	289.9184
Prob (F/LR-statistic)	<0.001	0.115138	<0.001	<0.001	<0.001

Source: Compiled by author using survey data and EViews 7.
[a]t-statistics in square brackets.
*10% level of significance.
**5% level of significance.
***1% level of significance.

participants would do well to choose cycling or running events. The implication of the latter is that when a city, region or destination wants to use a sport event to boost income generation in an off season, these results are useful in deciding which event could potentially generate the revenue needed, given the carry capacity of the destination. In the case where the destination is ecologically sensitive or has a limited carry capacity, event organizers would do well by hosting an event that attracts mainly professional/serious participants, since this would maximize benefits while minimizing adverse impacts.

Second, each event has its own unique set of determinants of spending, which confirms the research by Saayman and Krugell (2010) and Nogawa *et al.* (1996) that found that sports events determinants differ from other tourist-event participation. This research goes further and shows that the determinants of spending for the three events differ considerably between sporting events.

Socio-demographic variables are the dominant determinants of spending. The variables gender, age and marital status, as well as the residence of participants, in this case, Gauteng province, are present in all three events.

DOI: 10.1002/jtr

(1) Gender: the results are inconclusive, since women spend more at the swimming event, whereas men spend more at both the running and cycling events. This again shows that generalization of the influence of gender may be premature since its influence is event specific.
(2) Age: this research confirms the results by Thrane (2002) and Saayman and Saayman (2006) but contradicts the findings by Pouta *et al.* (2006) and Mehmetoglu (2007).
(3) Province of residence: the finding that place of origin matters for spending confirms the research by Saayman *et al*. (2007) and Cannon and Ford (2002).

Among behavioural variables, the nights spent at the event and group size are common to all the events. The significance of the number of nights spent at the event confirms the general notion that length of stay impacts positively on spending.

Travel motives are an explanatory factor for spending at all the events, although between events, the nature of the motives differs, which confirms the research results by Mok and Iverson (2000) and Letho *et al.* (2004). Professional or social participation plays a significant role for the cycling and the running events but not the swimming event, which indicates that participants at swimming events are more homogenous.

Third, from a methodological point of view, results from the quantile regressions differ substantially from that of the mean (stepwise) regression. Very few variables tend to explain variance in spending in the low-spending segments of the participants (the first quartile – 0.25). Even the median regressions differ visibly from the mean regression results, with most of the coefficients in the mean regression overstating the influence of various factors on spending. Under the high spenders (75th and 95th percentiles), a wider variety of variables explain variance in spending. This implies that the low spenders at each event are more homogenous in terms of socio-demographics, behaviour and motivation than the high-spending segments. In terms of identifying and marketing the event to high spenders, this poses a challenge to event organizers.

Fourth, the results show that the Midmar Mile has a more focused participation base compared with the Argus, which attracts a wider group of participants and has a greater social focus. In addition, the marathon has successfully diversified to reach a wider audience, with at one end social runners and at the other end ultramarathon athletes who are serious runners. These results therefore verify that an event of this size and scope can successfully accommodate social and professional participants – a lesson that other events could also successfully implement. However, it does require careful planning in order to retain the integrity of the event. This is an aspect that the Midmar organizers may learn from the marathon if they want to increase their participation base.

CONCLUSIONS

The purpose of this research was to explore the determinants of spending at three major sporting events in South Africa, using the same questionnaire and methodology. All the events are endurance events and represent three different sport activities: cycling (Argus), swimming (Midmar) and running (Two Oceans). As all three events are endurance events, the expectation was that the events would share similar motives for participating and the determinants of spending. However, the research, in fact, found that each event has its own unique attributes.

This research makes the following contributions to the literature: (i) for the first time, the socio-demographic, behavioural and motivational determinants of three major sporting events were identified and compared; (ii) for the first time, quantile regression analysis has been applied to data from sporting events; (iii) the important role that motivations play in explaining variance in spending at sporting events have been confirmed; and (iv) low-spending segments at sporting events are more homogenous than high-spending segments.

The findings also confirm previous research that identified the significant influence of socio-demographic, behavioural and motivational factors on spending behaviour of participants at an event. Yet, some contradictory results were also found in aspects such as

DOI: 10.1002/jtr

education levels, children, distance travelled and frequency of participation.

Since this research mainly focus on individual participation events, it would be interesting to compare the results from this research with team sporting events in order to further explore the various determinants of spending of participants.

APPENDIX A

Estimated coefficients for Argus Cycle Tour.

REFERENCES

Botha K, Kruger M, Saayman M. 2010. A marketing analysis of participants and economic impact of the 2010 Midmar Mile (Unpublished Report). Institute for Tourism and Leisure Studies: Potchefstroom.

Cai LA, Hong G, Morrison AM. 1995. Household expenditure patterns for tourism products and services. *Journal of Travel and Tourism Marketing* **4**(4): 15–40.

Cannon TF, Ford J. 2002. Relationship of demographic and trip characteristics to visitor spending: an analysis of sport travel visitors across time. *Tourism Economics* **8**(3): 263–271.

Cooper DR, Emory WC. 1995. *Business Research Methods*. Irwin: Chicago.

Cornell University. 2007. StatNews #70: Quantile Regressions. Available at http://www.cscu.cornell.edu/news/statnews/stnews70.pdf (accessed 3 August 2010).

Craggs R, Schofield P. 2006. *Expenditure Segmentation and Visitor Profiling: Regenerating the Quays in Salford, UK*. University of Salford: Salford.

Downward PM, Lumdson L. 2002. Beyond the demand for day visits. *Tourism Economics* **9**(1): 67–76.

Field A. 2005. *Discovering Statistics Using SPSS*. 2nd edn. London: Sage Publications.

Frechtling DC. 2006. An assessment of visitor expenditure methods and models. *Journal of Travel Research* **45**(1): 26–35.

Gokovali U, Bahar O, Kozak M. 2007. Determinants of length of stay: a practical use of survival analysis. *Tourism Management* **28**: 736–746.

Gyte D, Phelps A. 1998. Patterns of destination repeat business: British tourists in Mallorca, Spain. *Journal of Travel Research* **28**(1): 24–28.

Jang S, Bai B, Hong GS, O'Leary JT. 2004. Understanding travel expenditure patterns: a study of Japanese pleasure travellers to the United States by income level. *Tourism Management* **25**(3): 331–341.

Kim H, Borges MC, Chon J. 2006. Impacts of environmental values on tourism motivations: the case of FICA, Brazil. *Tourism Management* **27**: 957–967.

Kruger M. 2009. Spending behaviour of visitors to the Klein Karoo National Arts Festival. Unpublished MA Dissertation, North-West University: Potchefstroom.

Kruger M, Saayman M, Saayman A. 2009. Sociodemographic and behavioural determinants of visitors at the Klein Karoo National Arts festival. *Event Management* **13**(1): 53–68.

Kruger M, Saayman A, Saayman M, Rossouw R. 2010. A marketing analysis and economic impact of the Old Mutual Two Oceans Marathon 2010 (Unpublished report). Institute for Tourism and Leisure Studies: Potchefstroom.

LaChausse RG. 2006. Motives of competitive and non-competitive cyclists. *Journal of Sport Behaviour* **29**(4): 304–314.

Lee H. 2001. Determinants of recreational boater expenditure on trips. *Tourism Management* **22**(6): 59–667.

Lee CK, Lee YK, Wicks BE. 2004. Segmentation of festival motivation by nationality and satisfaction. *Tourism Management* **25**: 61–70.

Letho XY, Cai LA, O'Leary JT, Huan T. 2004. Tourist shopping preferences and expenditure behaviours: the case of the Taiwanese outbound market. *Journal of Vacation Marketing* **10**(4): 320–332.

Long PT, Purdue RR. 1990. The economic impact of rural festivals and special events: assessing the spatial distribution of expenditures. *Journal of Travel Research* **28**(4): 10–14.

Mak J, Monour J, Yonamine D. 1977. Determinants of visitor expenditures and visitor lengths of stay: a cross-section analysis of U.S. visitors to Hawaii. *Journal of Travel Research* **15**(3): 5–8.

Mehmetoglu M. 2007. Nature-based tourists: the relationship between their trip expenditures and activities. *Journal of Sustainable Tourism* **15**(2): 200–215.

Mok C, Iverson TJ. 2000. Expenditure-based segmentation: Taiwanese tourists to Guam. *Tourism Management* **21**(3): 299–305.

Mottiar Z. 2006. Holiday home owners, a route to sustainable tourism development? An economic analysis of tourist expenditure. *Journal of Sustainable Tourism* **14**(6): 582–599.

Nogawa H, Yamaguchi Y, Hagi Y. 1996. An empirical research study on Japanese sport tourism in sport-for-all events: case studies of a single-night event and a multiple night event. *Journal of Travel Research* **35**(2): 46–54.

Oppermann M. 1997. Visitation of tourism attractions and tourist expenditure patterns: repeat

DOI: 10.1002/jtr

versus first-time visitors. *Asia Pacific Journal of Tourism Research* **1**(1): 61–68.
Pouta E, Neuvonen M, Sievänen T. 2006. Determinants of nature trip expenditures in Southern Finland – implications for nature tourism development. *Scandinavian Journal of Hospitality and Tourism* **6**(2): 118–135.
QMS. 2007. EViews6 User's Guide II. Quantitative Micro Software: Irvine, CA.
Saayman A, Saayman M. 2006. The Socio-demographics and visitation patterns of arts festivals in South Africa. *Events Management* **9**(4): 211–222.
Saayman M, Krugell W. 2010. Determinants of visitor spending to the Wacky Wine Festival. *Journal of Economic and Financial Sciences* **3**(2): 153–170.
Saayman M, Rossouw R. 2010. The Cape Town International Jazz Festival – more than just jazz. *Development Southern Africa* **27**(2): 255–272.
Saayman M, Saayman A. 2008. Socio-demographic and behavioural determinants of visitor spending at a national arts festival: a panel data analysis. *World Journal on Events* **1**(1): 28–33.
Saayman M, Krugell W, van der Merwe P. 2007. The determinants of spending by biltong hunters. *South African Journal of Economics and Management Sciences* **10**(2): 184–194.
Saayman M, Saayman A, Streicher H. 2008. The economic impact of the Cape Argus Cycle Tour (Unpublished Report). Institute for Tourism and Leisure Studies: Potchefstroom.
Saayman M, Kruger M, Ellis S. 2010. A motivation based typology of open water swimmers. Paper presented at the Events Conference, 13–16 July, Leeds, UK.
Saayman M, Saayman A, Slabbert E. 2011. Expenditure-based segmentation of visitors to the Grahamstown National Arts Festival. *South African Journal of Business Management* **42**(1): 9–16.
Schneider IE, Backman SJ. 1996. Cross-cultural equivalence of festival motivations: a study in Jordan. *Festival Management and Event Tourism* **4**(3/4): 139–144.
Seiler VL, Seiler MJ, Hsieh C, Hsieh S. 2002. Modelling travel expenditures for Taiwanese tourism. *Journal of Travel and Tourism Marketing* **14**(4): 47–59.
Skuras D, Dimara E, Petrou A. 2005. Rural tourism and visitors' expenditure for local food products. *Regional Studies* **40**(7): 767–779.
Streicher H. 2009. Profiling participants of the Cape Argus Cycle Tour. Unpublished M.Com Dissertation, North-West University: Potchefstroom.
Streicher H, Saayman M. 2010. Travel motives of participants in the Cape Argus Pick n Pay Cycle Tour. *South African Journal for Research in Sport, Physical Education and Recreation* **32**(1): 121–131.
Thrane C. 2002. Jazz festival visitors and their expenditures: linking spending patterns to music interest. *Journal of Travel Research* **40**(3): 281–286.
Wilton JJ, Nickerson NP. 2006. Collecting and using visitor spending data. *Journal of Travel Research* **45**: 17–25.

DOI: 10.1002/jtr