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The economic value of the Trans Baviaans mountain biking event in the Baviaanskloof Mega-Reserve, Eastern Cape, South Africa: A travel cost analysis using count data models

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ABSTRACT

This paper reports the first formal non-market valuation of a major mountain biking event in South Africa by applying the individual travel cost method (TCM). Due to the non-negative, integer nature of the trip data, several count data models were estimated. Mountain biking is fast becoming one of South Africa's most popular recreational sports and these estimates of economic value may assist policy-makers in managing mountain biking venues in general, and congestion conflicts, specifically. The locus of this study is the annual Trans Baviaans mountain biking event staged in the Baviaanskloof Mega-Reserve situated in the Eastern Cape Province of South Africa – part of this reserve was declared a World Heritage Site in 2004. In total, 288 fully completed questionnaires were collected and used in the analysis. The economic value estimated, by employing a negative binomial model with endogenous stratification, for trips taken to the event during 2014 amounted to ZAR2308 (US$201) per person per trip.

MANAGEMENT IMPLICATIONS

The paper underlines the substantial benefits of a MTB event. The provided findings are valuable
- to plan MTB events at other locations,
- to compare the benefits with other landscape related sport events, and
- to improve MTB events including environmental information and mitigation of impacts.

1. Introduction

Mountain biking (MTB) is one of the fastest growing sports in South Africa (Barry, 2014; Du Toit, 2013). One of the main reasons for the exponential growth of MTB is the fact that most races cater for the whole family (Du Toit, 2013). South Africa is considered a MTB 'mecca' with more than 750 races hosted annually (Barry, 2014). The Absa Cape Epic, a MTB race held over eight day stages, is considered the most televised MTB competition of all time, whilst the Nedbank Sani2c is currently the world's biggest MTB stage race (Barry, 2014). South Africa also plays host to the UCI Mountain Bike World Cup. More specifically, Pietermaritzburg, KwaZulu-Natal hosted the cups from 2009 to 2014, and did so again in 2015 (Du Toit, 2013). Another South African MTB race, the Trans Baviaans, held annually in the Baviaanskloof Mega-Reserve, Eastern Cape, had the title as the "longest single stage team MTB event" in the world for six years – 400 teams comprising of 2, 3 or 4 cyclists per team are allowed to enter the race (Trans Baviaans, 2015).

It is estimated that the value of the cycling-as-sport industry in South Africa ranges between ZAR600 million and ZAR1 billion (Barry, 2014). Cycling retailers have reported growth in mountain biking sales, specifically in South Africa, of between 25% and 75% in 2014. According to one international supplier, South Africa showed the highest per capita spending on cycling equipment in the world (Barry, 2014). It is also estimated that there are approximately 1 million cyclists in South Africa, of whom between 200,000 to 300,000 participate in cycling events (Barry, 2014). Despite a dearth of actual data, it is estimated (based on equipment sales) that approximately 60% of all cyclists are mountain bikers (Du Toit, 2013).

Despite the growing popularity of MTB, economic valuations of this recreational pursuit are limited (Chakraborty & Keith, 2000). Buchanan, Morey, and Waldman (1998) employed a random utility model of choice to determine a person's per-trip compensating

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variation as a result of changes in MTB site characteristics and/or access fees. Fix and Loomis (1998) compared the economic value of MTB estimated by employing both a revealed preference (a travel cost model) and a stated preference (a contingent valuation model) technique. Chakraborty and Keith (2000) used various count data models to determine the recreation demand and economic value of MTB in Moab, Utah. More specifically, the consumer surplus per person per trip (i.e. the non-market benefit the mountain biker derives from the mountain biking experience) as well as the total annual use value for mountain biking in the Moab district were estimated (Chakraborty & Keith, 2000). Fix, Loomis, and Eichhorn (2000) applied a travel cost model to study the potential for over-estimating consumer surplus due to the use of endogenously selected travel costs in Moab, Utah. Loomis, Gonzalez-Caban, and Englin (2001) employed a travel cost model to test for differential effects of forest fires on hiking and MTB demand and benefits. Finally, Hesseln, Loomis, Gonsalez-Caban, and Alexander (2003) applied a travel cost model to study the effects of wild and prescribed fires on mountain biker visitation to New Mexico.

The benefit value of MTB is important from a resource policy point of view. The increase in the popularity of MTB and the concomitant increase in the number of mountain bikers may lead to increased conflicts with other recreational users, such as hikers. Knowledge of the economic benefit of MTB could assist in resource management decisions, such as improving the allocation of resources based on an evaluation of the economic values generated by each user group (Buchanan et al., 1998; Chakraborty & Keith, 2000; Fix & Loomis, 1998). Monetary estimates of MTB can also be used in cost-benefit analyses of trail construction and management – the marking of designated MTB trails and the repair of existing, eroded trails may impose costs on MTB destinations (Fix & Loomis, 1998). The most popular method, as discussed above, to estimate the economic value of MTB is the travel cost method. It is important to note that this technique typically focuses on the non-market benefits which recreationists themselves derive from the recreational experience. These benefits are usually not the only 'economic value' associated with the recreational activity. The economic value of mountain biking at a specific venue, for example, may also include the (market-based) revenues or profits which mountain bikers generate for the local economy.

To date, no formal valuation studies have been conducted to estimate the economic value of MTB generally, or of MTB events specifically, in South Africa by means of non-market valuation techniques. This study aims to partly fill this information gap. More specifically, this paper employs a travel cost analysis to determine the economic value of a major MTB event, namely the Trans Baviaans biking marathon, staged at one of South Africa's major MTB destinations, namely the Baviaanskloof Mega-Reserve. As mentioned above, the travel cost analysis limits itself to estimating the non-market net benefit which recreationists derive from their recreational experience. This is only one component – albeit an important one – of the 'economic value' of mountain biking at the study location. The travel cost method is well suited to valuing the economic benefits of MTB and MTB events since the cost associated with travel is usually the main expenditure incurred by a cross-section of mountain bikers (Loomis & Walsh, 1997). Due to the non-negative, integer nature of the data, count data models were estimated in this study.

2. The study area

The Baviaanskloof or 'Valley of Baboons', a 174,400 ha Mega-Reserve, which lies 75 km north-west of Port Elizabeth in the Eastern Cape Province, South Africa (Fig. 1), was selected as the study area for estimating the economic value of a mountain biking event by means of the travel cost model. It falls within the smallest, most distinctive of the world's six floral kingdoms, namely the eastern Cape Floral Kingdom (CFK), and has been recognised as one of the world's 25 "biodiversity hotspots" (Boshoff, Cowling, & Kerley, 2000). In addition to the rich flora, the Baviaanskloof is considered a region of high fauna biodiversity and also harbours a rich and varied cultural heritage (Boshoff et al., 2000). The Baviaanskloof Wilderness Area (BWA), a World Heritage Site (declared in 2004), forms part of the greater Mega-Reserve.

The Baviaanskloof has become one of the most popular mountain biking destinations in South Africa. As mentioned above, it also plays host to the Trans Baviaans MTB one-day stage race. In terms of the conditions for conducting travel cost studies (see Freeman (2003)), the Baviaanskloof site is almost ideal: many of the trips undertaken by visitors will be single-site and single-

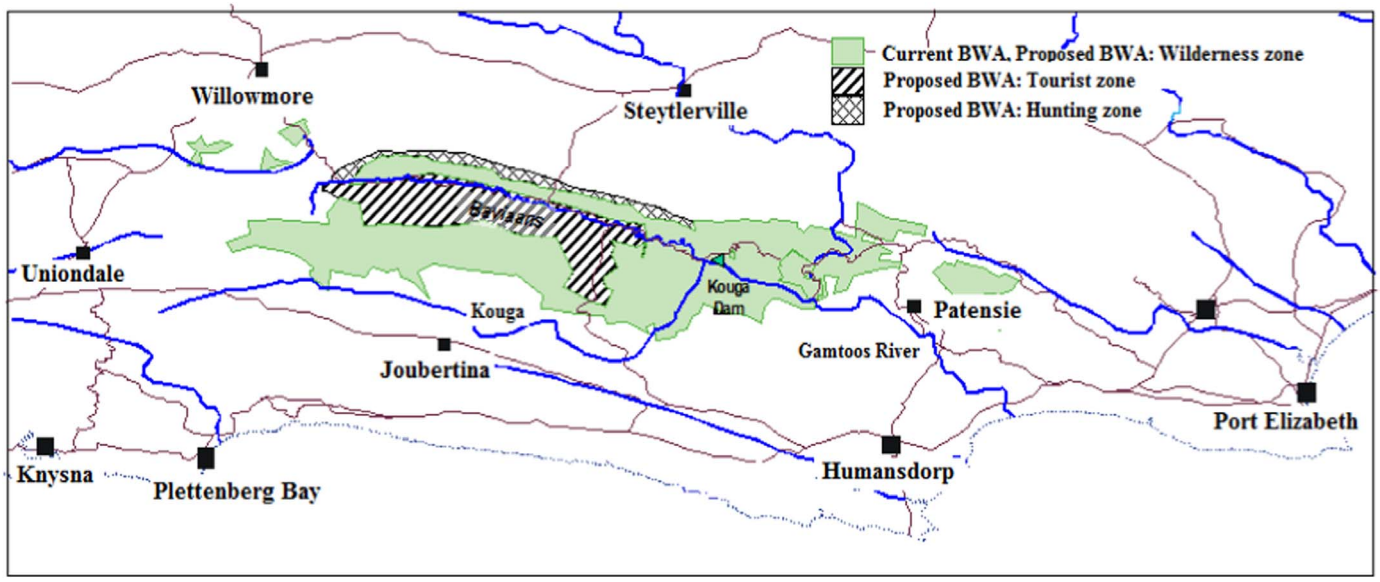

Fig. 1. The geographical location of the Baviaanskloof Mega-Reserve.
Source: Joubert, Smith, and Neke (1999).

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