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# Estimating willingness to pay for a cycling event using a willingness to travel approach

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## HIGHLIGHTS

- This study estimates the value of nonmarket benefits to sport event participants.
- Survey data from participants at a US bike ride are used.
- Willingness to travel is converted into monetary values using travel costs.
- Willingness to pay estimates are internally valid and temporally reliable.
- Nonmarket benefits are significant, between $41 and $57.

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## ABSTRACT

This study examines the monetary value of nonmarket benefits to participants of an active sport tourism event, such as happiness and pride from participating in an event. Willingness to travel (WTT) greater distances for future events is assessed and converted into willingness to pay (WTP) estimates using travel costs. Using survey data from the 2014 and 2015 Blood Sweat Gears bike ride, the intended visitation models show that changes in travel cost have a significant negative effect. WTP to revisit the event was between $41 and $57. The likelihood of return visit decreases as travel costs increase, indicating that WTP estimates are internally valid. WTP estimates stemming from two years of data collection are stable, suggesting that they are also temporally reliable. This study demonstrated the feasibility of using stated preference WTT questions to assign a monetary value to nonmarket benefits of active sport tourists.


## 1. Introduction

In recent years, the number of recurring participant-driven sport events has increased, particularly in endurance sports like triathlon (Wicker, Prinz, & Weimar, 2013), marathon running (Wicker, Hallmann, & Zhang, 2012), and cycling (Kaplanidou & Vogt, 2007). Following Jago and Shaw (1998), these events are referred to as small-scale events even though they can involve a large number of participants. Several hundreds or thousands of participants travel to these events, most of them with the purpose of competing in these events. These participants are referred to as active sport tourists because they travel to actively participate in competitive or recreational sport (Gammon & Robinson, 2003).

These sport tourists can derive various benefits from event participation, including happiness when finishing the race (Maxcy, Wicker, & Prinz, 2016), pride from having accomplished personal goals (Allen, Dechow, Pope, & Wu, 2017), or collecting places which can positively affect a participant's sporting identity (Shipway & Jones, 2008). These benefits are referred to as nonmarket benefits. Even though existing studies looking at residents and spectators have indicated that nonmarket benefits can be substantial (e.g., Wicker, Whitehead, Mason, & Johnson, 2016), research examining event participants has largely neglected the valuation of nonmarket benefits with a few exceptions (Whitehead, Weddell, & Groothuis, 2016).

Within these prior studies, nonmarket benefits have typically been estimated using the contingent valuation method (CVM), where survey respondents are presented with a hypothetical scenario and asked for their WTP for the scenario to occur or to be

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avoided (Carson, 2000). However, assessing an individual's *true* WTP is difficult because questions must be incentive compatible, i.e., they should be designed in a way that respondents neither over- nor underestimate their WTP (Carson, Groves, & List, 2014). If these methodological requirements are not met, CVM studies suffer from hypothetical bias, implying that hypothetical WTP differs from actual WTP, i.e., when respondents would have to make an actual purchase. For example, hypothetical bias is present when individuals overestimate their WTP because of the hypothetical nature of the scenario (Carson et al., 2014). Consequently, the validity and suitability of CVM has been controversially discussed in the literature (Haab, Interis, Petrolia, & Whitehead, 2013; Hausman, 2012) and measures have been suggested to mitigate the effect of hypothetical bias (Loomis, 2011). While making CVM better represents one option for improving monetary estimates (Haab et al., 2013), an alternative possibility is to look at related methods and tailor them towards the purpose of valuing nonmarket benefits.

The present study suggests applying willingness to travel questions as an alternative approach. The purpose of this study is to estimate the monetary value of nonmarket benefits of a cycling event for active event participants using a WTT approach. WTT increasing distances is assessed in the context of revisit intention in order to estimate the value of the event to participants. These aspects lead to the following two main research questions guiding this study: (1) how do increasing travel distances affect intention to revisit the cycling event? And (2) what is the monetary value of nonmarket benefits to event participants? This study adds to the body of research on participant-driven events and monetary valuation of nonmarket benefits. Specifically, it contributes to the stated preferences literature by examining the feasibility of WTT questions from both a theoretical and empirical perspective. Theoretically, the advantages of WTT questions over other approaches are carved out and discussed. Empirically, this study is able to confirm that the resulting consumer surplus estimates are internally valid and temporally reliable. The feasibility of this alternative method is of practical value because its estimates can be integrated into benefit-cost analyses which are typically conducted for policy advice. In particular, it allows expanding the spectrum of benefits considered in such analyses by considering nonmarket benefits which have previously been neglected. Importantly, the present approach provides monetary values that allow comparisons with other event costs and benefits.

## 2. Conceptual framework and literature review

### 2.1. Willingness to travel

Nonmarket benefits can be valued using WTT. The concept of WTT reflects the maximum distance an individual would be willing to travel under specific circumstances. WTT is elicited using the contingent behavior method (CBM) (Whitehead, Johnson, Mason, & Walker, 2013) or, synonymously, contingent activity method (Heyes & Heyes, 1999). Similar to CVM, a hypothetical scenario is at the heart of CBM where respondents are asked, for example, how much further they would be prepared to travel for a specific scenario to occur or to be avoided (Bakhtiari, Jacobsen, & Jensen, 2014). In fact, respondents are asked for their WTP for participation in the event, but their payment is expressed in travel distances, a nonmonetary currency (Heyes & Heyes, 1999). The advantage of a nonmonetary expression is that protest-motivated bidding – respondents reporting a zero amount although their true valuation of the good is higher – is assumed to be less likely in WTT questions compared with WTP formats (Heyes & Heyes, 1999).

WTT estimates can be converted into WTP estimates when information about travel costs per mile or kilometer is available (Bakhtiari et al., 2014). However, the challenge of how to adequately monetize travel distances and resulting journey time remains (Heyes & Heyes, 1999). Typically, studies applying the travel cost method (TCM) are consulted for advice about monetization possibilities. The critical questions are what the value of travel time is and whether the wage rate is of use in estimating the value of travel time. Hence, the calculation of travel costs has been controversially discussed in the TCM literature, particularly with regard to the inclusion and treatment of opportunity cost of time (e.g., Chae, Wattage, & Pascoe, 2012; Pascoe, Doshi, Dell, Tonks, & Kenyon, 2014). The calculated travel costs and resulting WTP estimates are, therefore, highly sensitive to the chosen parameters (Hynes, Hanley, & O'Donoghue, 2009).

To conclude, monetary values obtained via stated preference WTT questions were found to represent useful complements to measures derived with other methods, such as TCM based on revealed preference data or CVM (Heyes & Heyes, 1999). Assessing WTT is an alternative and compared to CVM more indirect way of assigning a monetary value to nonmarket benefits, taking the difficulties of monetizing travel distances and time into account. Such stated preferences techniques are particularly valuable when the aim is to provide guidance for policy makers ex ante (Bakhtiari et al., 2014; Walker & Mondello, 2007).

### 2.2. Valuation approaches

Several approaches have emerged to value nonmarket benefits of tourism destination choices and event participation, respectively. The first approach is a combination of CVM and TCM. Respondents are presented with a hypothetical scenario supposing an increase in recreation trip costs and asked whether they would still have taken their current trip under these circumstances (e.g., Cameron, 1992; Gonzalez, Loomis, & Gonzalez-Caban, 2008). The general idea is to combine stated preference with revealed preference methods in a framework that estimates the site demand function (TCM) and the utility difference function (CVM) simultaneously (Cameron, 1992). The inherent theoretical expectation is that the two functions have the same underlying utility function which has to be questioned (Gonzalez et al., 2008). A problem of studies applying this approach is that there may be inconsistency with the randomly assigned trip costs in the hypothetical trip question. Another problem of Cameron's (1992) study is that there may be significant measurement errors in the travel cost variable because it does not consider the value of travel time.

Second, CBM has been used to estimate the value of return visitation with the registration fee as the payment vehicle (Söderberg, 2012; Whitehead et al., 2016). Respondents are presented with a hypothetical scenario and asked for their likelihood of return visitation under varying registration fees. This approach is based on the assumption that the WTP question is incentive compatible for some respondents, but not all. While some respondents may indeed respond truthfully positively or negatively, others may respond strategically (Whitehead et al., 2016). Following Wiser (2007), incentive compatibility is influenced by the payment vehicle. Selecting the registration fee as payment vehicle implies that some respondents anticipate price increases as a result of a survey asking for their WTP for registration. Hence, these participants may indicate that they do not want to revisit the event in order to signal that they do not want registration fees to increase (Whitehead et al., 2016). They respond strategically by reporting a lower amount of WTP, leading to hypothetical bias. Consequently, a problem with this approach is that responses to registration fee questions may be less incentive compatible. Like with the first approach, the use of monetary expressions may encourage protest-motivated bidding (Heyes & Heyes, 1999).