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# Ex Ante and Ex Post Willingness to Pay for Hosting a Large International Sport Event

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## Abstract

Using the contingent valuation method, we estimate residents' ex ante and ex post willingness to pay (WTP) for hosting a large international sport event: The "big start" of the 2016 Giro d'Italia, which was held in the Gelderland region of the Netherlands. The percentage of residents with a positive WTP changed from 29.7% before the event to 39.3% immediately after the event, while average WTP increased significantly from €3.58 to €4.45, leading to an increase of residents' valuation from €5.8 million to €7.1 million. Additionally, following the event in the media and attending the event play an important role in explaining residents' WTP.

## Keywords

sport events, contingent valuation, willingness to pay, media, Giro d'Italia

National and regional governments in many countries spend significant amounts of public money on hosting or organizing large-scale sport events, claiming they may have large economic impacts and increase sport participation or even public health. However, most research<sup>1</sup> indicates that such benefits are nonexistent or relatively small. As a

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result, more research has been focused on the intangible effects of sport events, in order to explain the continued interest of governments to host and pay for these events (Coates & Szymanski, 2015). These intangible effects of sport events include effects such as happiness, excitement, and pride (De Nooij & Van den Berg, 2013). The intangible impacts of a sport event, for the population of a nation or region, can be measured through the contingent valuation method (CVM), by asking individuals about their willingness to pay (WTP) for hosting the event (Atkinson, Mourato, Szymanski, & Ozdemiroglu, 2008). Most of this event-related research has been on residents' WTP before the event. However, ex ante valuations may under- or overestimate residents' WTP at or immediately after the event. To gain a better insight in possible shifts in the residents' valuation of an event, we examine both the ex ante willing to pay (WTP0) and ex post willing to pay (WTP1) for a large sport event. Using panel data, we are able to distinguish between ex ante and ex post valuations within a single research population as well as between visitors and nonvisitors of the event.

The case of interest for our research is the "big start" of the 2016 Giro d'Italia, which was hosted in the Gelderland region of the Netherlands. The Giro d'Italia is the second largest cycling event in the world, after the Tour de France. It is a 3-week event for professional elite cyclists that is part of the international Union Cycliste International (the world cycling governing body) World Tour. First held in 1909, its 20-odd stages attract hundreds of thousands of spectators along the course, and millions of followers of the event on the TV and (social) media. The so-called Grande Partenza, or big start, of the first stage or stages has occasionally been held outside Italy. Interested cities or regions are invited by RCS Sports (part of RCS Media, formerly know as Rizzoli-Corriere della Sera), the owner of the Giro d'Italia, to bid for hosting this big start. The privilege to host the 2016 Grande Partenza was acquired by the regional government of the Gelderland province in the Netherlands, along with the three municipalities of Apeldoorn, Arnhem, and Nijmegen, all located within the Gelderland province. The 2016 Grande Partenza consisted of a Team Presentation on May 5 (in Apeldoorn) and three race stages from May 6 until May 8. The three municipalities were all assigned a stage start and a stage finish, while the courses (up to 190 km per day) were situated almost completely within the Gelderland area. Gelderland has approximately 2 million inhabitants (Statistics Netherlands, 2017). Although no specific permanent sport facilities had to be created, organizational costs for the local organizing committee were considerable, amounting to €12.4 million (De Boer et al., 2016). These costs included side events such as amateur cycling events and school projects to promote cycling for children. The regional and local governments paid around €9 million, while the national government contributed €2.5 million. While around 10% of the budget was spend on side events, public funding amounted to 93% of all income of the organizing committee (De Boer et al., 2016).

The Giro d'Italia big start can be classified as a major spectator event (Type B in the Gratton & Taylor (2002) classification). The event attracted approximately 482,500 visitors and gained significant national and international media attention

(De Boer et al., 2016). Held in the public space, the event was free to access, except for a few stands for sponsors and VIPs. Therefore, the big start can be viewed as a public good, since it is characterized by nonexcludability as well as nonrivalry in consumption (Downward, Dawson, & Dejonghe, 2009). Because of the nonexcludability, it is hard for the organizers and policy makers to extract the utility enjoyed by attendees of the event. For that reason, revealed preferences—as would be evident by tickets sales—were not measurable, and we had to resort to the more indirect measurement of CVM.

Many studies have valued the intangibles of upcoming large or major sport events. Much less is known about the actual valuation during or after sport events. As such, an *ex ante* estimation may either be an overvaluation or be an undervaluation. This study investigates if there is a gap in residents' WTP to host an event before and immediately after a large sport event, in this case, the big start of the 2016 Giro d'Italia. Our research question is does the residents' WTP1 for hosting a large sport event as the big start of the Giro d'Italia differ from the *ex ante* valuation? Additionally, we will investigate which factors affect these WTPs, and whether different factors are related to WTP at different times. Apart from socioeconomic variables, we also analyze whether usage of the event, both in attending the event and following the event in the media, contributes to a residents' WTP. This research will contribute to the understanding of differences between WTP0 and WTP1 for a sport event as well as factors that are related to the intangible effects. The outcomes will be valuable for public policy makers that may bid for hosting events as well as event organizers.

The plan of this article is as follows. In the Literature Review section, we present some relevant literature, while the approach of the CVM that we use is put forward in the Method section. We present the data and the empirical results of our models in the Data and Results section. Finally, in the Discussion and Conclusion section, we present the conclusions, implications, and limitations of our research.

## Literature Review

There is little evidence that the economic benefits exceed the economic costs of large-scale sport events (Baade & Matheson, 2004; Coates & Szymanski, 2015). A literature review by Porter and Chin (2012) shows that, in the 40 articles they investigated, no consistent positive economic impacts from mega sporting events exist. With this knowledge, economists like Coates and Szymanski (2015) have wondered why cities and countries are often eager to bid to host the Olympics or the World Cup. They argue that public funding for major sport events may be justified by intangible effects (see Maennig & Porsche, 2008). Kavetsos and Szymanski (2010) have shown that a feel-good factor was significantly associated with hosting major soccer events. Sporting events can have several potential intangible benefits such as civic pride, community spirit (e.g., Johnson, Mondello, & Whitehead,

2007), and happiness (Kavetsos & Szymanski, 2009). Other intangible effects of sport events are associated with an increasing image of the host country, feelings of national pride, and improved development of the elite sport system, although these factors have been scarcely researched (Wicker, Hallmann, Breuer, & Feiler, 2012).

## **CVM**

To measure the value of the nonmarket dimensions in sport events, the CVM can be used. The CVM tool uses surveys in which the respondent is presented with a hypothetical scenario and then asked to state his or her WTP for the public good described in that scenario (Walker & Mondello, 2007). According to Baade (2006), the rationale for the public funding of sport events relies on this contingent valuation. The method originates from environmental economics and has been adopted in other research fields dealing with nonmarket goods such as health economics. Since 2000, CVM has become a regularly used method to estimate the intangible values in sport and is often used for measuring citizens' valuation of hosting sport events. Almost all research on the WTP for sport events has been in advance (ex ante) of an actual or planned event, often the Olympic Games. Both Atkinson, Mourato, Szymanski, and Ozdemiroglu (2008) and Walton, Longo, and Dawson (2008) demonstrated a WTP0 among UK residents toward funding for the 2012 London Olympics. Four years before the actual event, they estimated the total intangible value to UK residents at approximately £2 billion (around €2.4 billion). Although substantial, this was well below the total public cost of hosting the games of almost £9 billion (British Broadcasting Corporation, 2013). Heisey (2009) researched residents' WTP for hosting the 2016 Summer Olympics in Berlin, San Francisco, and Chicago. He found an average individual WTP varied from €16 for Berlin to \$36 (€31) for San Francisco and \$55 (€48) for Chicago. Using a German nationwide online survey, Wicker, Whitehead, Mason, and Johnson (2016) estimate the average individual WTP for the 2024 Olympic Games over a 5-year period at €51 per month or over €3,000 in total.

Very little research has been done after an actual sport event, which raises the question whether the WTP0 still holds for the actual or WTP1. To our knowledge, Heyne, Suessmuth, and Maennig (2007) present the only research of the WTP prior to as well as after a sporting event, in their case the 2006 Soccer World Cup in Germany. They find that total WTP increased by 129% after the event and conclude that sporting events therefore may be viewed as experience goods. Additionally, Ma, Ma, Wu, and Rotherham (2013) demonstrated that, from a behavioral perspective, local residents' perceptions of mega event impacts vary pre-, during-, and postevent. This raises the question whether the "usage" of the sport event may explain the residents' valuation.

## ***Use and Nonuse Values***

According to Barget and Gougnet (2007), the 'use value' corresponds with the utility actually felt by the consumer at the sport event. Other values that contribute to the

total economic value of sporting events constitutes are the optional value (utility felt by people about the possibility of benefiting from the sporting event in the future), legacy value (long-lasting infrastructures as well as satisfaction felt as a result of handing down a sporting event to future generations), and existence value (utility from knowing that the event exists). These all represent values for nonusers. Allmers and Maennig (2009) argue that sport events may have a “nonuse effect,” which also has to be considered. This is the benefit for the host country’s population, even for those individuals who do not visit the event. Reasons for benefits without experiencing the sporting event might be, among others, the increased topics of conversation and an increased national pride. The differences in valuation of an event between users and nonusers have first been demonstrated by Andersson, Armbrecht, and Lundberg (2012) for a music festival. This approach, developed in environmental economics, has been successfully applied to culture (Armbrecht, 2014), but just very rarely in sports (Allmers & Maennig, 2009). In sports, Wicker et al. (2016) have shown that for German football teams different factors for attendees and nonattendees affect the decision to support the local team and the actual amount of WTP. Vekeman, Meulders, Praet, Colpaert, and Van Puyenbroeck (2012) demonstrated that sporting events, such as large cycling events, may have a value both for users, those who attend the event, and nonusers, those who do not visit the event.

Many sport events (including the Giro d’Italia) attract much media attention and media coverage may play an important role in the public’s perception of sport events (Gratton, Shibil, & Coleman, 2006). Thus far, the aspect of following the event in the media has not been incorporated in WTP research. It is also absent from Barget and Gouguet’s descriptions of any of the use and nonuse values. Only event visitors are included in the use value, so perhaps media following may be considered an implicit part of the “existence value” of an event. Therefore, to address a gap in the literature, we include media following in our research as an explanatory factor for WTP in addition to the actual attendance of the event.

## Method

To measure the WTP for nonmarket goods, two alternatives exist: the revealed preference method and the stated preference methods. The revealed preference method establishes WTP from observed behavior of the purchase of complementary or substitution goods. At best, this method can only provide estimates for the use value of an event (Vekeman et al., 2012). Because of the possible existence of intangible aspects, including nonuse values such as happiness or pride, the WTP is more appropriately measured by the stated preference method. Also, in the absence of ticket sales for the big start of the Giro d’Italia, demand could not be measured through revealed preference, so we had to resort to an indirect measurement method.

Following similar research on cycling (Vekeman et al., 2012) and other sport events such as the Olympics (e.g., Coates & Szymanski, 2015, Wicker et al., 2012),

we adopt the CVM, in which respondents are questioned directly about their WTP. The CVM uses surveys to measure an individual's WTP for a good or service (Coates & Humphreys, 2008). According to Carson (2000), this survey-based method is very appropriate to place "monetary value on environmental goods and services not bought and sold in the marketplace" (p. 1413). A disadvantage of CVM is the hypothetical bias, or the tendency of respondents to overstate their WTP. To address this issue, we incorporate an extensive and realistic reasoning for contributing to the event. To assess the WTP for hosting the big start of the Giro d'Italia in Gelderland, a standardized questionnaire was developed in which respondents are presented with a hypothetical situation. Following the advice of Mitchell and Carson (1990) to present a realistic scenario, inhabitants of Gelderland were *ex ante* presented with the following hypothetical situation:

As a result of the bankruptcy of a major sponsor of the "big start" of the 2016 Giro d'Italia, the organization has a major shortfall in the budget for the event. To still have the cycling race take place in Gelderland, residents are asked to contribute. If the total contribution of the public is insufficient, the Giro Start will be moved to Italy. What is the maximum amount of money that you personally are willing to contribute to maintain the start of the Giro d'Italia for Gelderland?

In the *ex post* research, this scenario was adjusted to the past tense and the respondents were asked to imagine the following, slightly altered, scenario:

As a result of the bankruptcy of a major sponsor of the "big start" of the 2016 Giro d'Italia, the organization had a major shortfall in the budget for the event. In order for the cycling race to take place in Gelderland, residents were asked to make a donation. If the total contribution of the public was insufficient, the Giro Start would have been moved to Italy. What is the maximum amount of money that you personally would be willing to contribute to have preserved the start of the Giro d'Italia for Gelderland?

We have chosen for the scenario of a bankruptcy, because in early 2016, several well-known Dutch brands (such as Vroom & Dreesmann, HEMA, and McGregor) went bankrupt or were in danger of being liquidated. Therefore, in our view, a bankruptcy presents a likely but exogenous reason to ask respondents for a private donation. Since governments at several levels (local, regional, and national) were already financially committed to the event, the alternative of including a case for public subsidies in our scenario was problematic.

The survey question considering WTP can be formulated either as open-ended question or by using a dichotomous choice format. Green, Jacowitz, Kahneman, and McFadden (1998) point out that a dichotomous approach has an anchoring effect which may distort the outcomes severely and conclude that an open-ended question most likely provides more information on the WTP. Castellanos, García, and Sánchez (2011) confirm this finding in the sport context for the support of funding for a local professional football club. We therefore used the open-ended question for the purpose

of our research. We assume that the strategic bias—the tendency of respondents to fill in a lower than real value in fear of having to really pay the amount on a later date—to be negligible because as we added an element of voluntariness to the WTP question.

The survey was conducted using the Longitudinal Internet Studies for the Social Sciences (LISS) panel of CentER data at the Tilburg University. The LISS panel is a representative panel of the Dutch population<sup>2</sup> and consists of around 8,000 individuals from ca. 5,000 households. The LISS panel consists of persons aged 16 and older. Our research was aimed at all the panel members from the Gelderland province. This amounted to 880 panel members. LISS works with 4-week panels. Respondents were questioned about 2 months before the event, from March 7 to April 3, 2016 (T0); and immediately after the event from May 9 to June 6, 2016 (T1). At both instances, persons who had not yet participated got a reminder up to 2 times. In total, 719 people participated in the first survey, of whom 642 also filled in the second survey (overall response rate of 73%). After eliminating incomplete surveys, the final data set consisted of 572 respondents that filled in the questionnaire on both T0 and T1.

In this article, we want to establish whether the WTP1 is different from the WTP0. We found no work on this difference besides Maenning (2007), who found a substantial increase in WTP at the 2006 FIFA World Cup in Germany. However, it must be pointed out that the German population experienced this event as particularly successful in terms of sporting success as well as the feel good factor and social impact (Ohmann, Jones, & Wilkes, 2006). Ma et al. (2013) showed that residents' perceptions of an event changes over time, but this change varies between different groups of residents. Based upon these results, our hypothesis is that WTP can change, but the direction is not clear. Therefore, we use a two-sided test when testing the null hypothesis that no change between WTP0 and WTP1 occurs.

Our second objective is to find a relationship between visiting the event and following the event in the media on the one hand and WTP on the other hand. Since Walton et al. (2008) showed that the potential attendance was positively related with WTP0, our hypothesis is that (an intention to) visit the events leads to a higher WTP. This is backed up by Andersson et al. (2012) who showed that for a music event there exists a significant and positive use value. Following the findings of Ma et al. (2013), we assume that people who follow the event in the media are doing so because of a positive interest in the event. Therefore, our hypotheses are that there is a positive relationship between both visiting the event and WTP as well as between following the event in the media and WTP.

Table 1 shows the dependent and independent variables in our data panel. The dependent variables are the WTP0 and WTP1. Standard socioeconomic variables that have shown to be significant indicators for WTP in sport, were included. These were gender, age,<sup>3</sup> education, and household income (see, e.g., Atkinson et al., 2008; Wicker et al., 2016). Additionally, sport-specific dummies were included for persons participating at least 12 times in the last 12 months in sports in general and in cycling specifically. Finally, dummies for both visiting the event and following it in the media have been included in both realization (at T1) and intention (at T0).



**Table 1.** Variables Description.

Variable	Question	Type	Description
<b>Dependent</b>			
WTP0	What is the maximum amount of euros that you personally would be prepared to contribute to make the Giro start in Gelderland possible?	Metric	Open question format WTP
WTP1	What is the maximum amount of Euros that you personally would have been prepared to contribute to make the Giro start in Gelderland possible?	Metric	Open question format WTP
<b>Independent</b>			
Visit intention	Do you intend to visit the Giro in Gelderland on 1 or more days?	Dummy	Yes = 1
Visit use	Did you visit the Giro in Gelderland on 1 or more days (dummy)	Dummy	Yes = 1
Media intention	Do you intend to follow the Giro in Gelderland in the media?	Dummy	Yes = 1
Media use	Have you followed the Giro in Gelderland in the media?	Dummy	Yes = 1
Female	Gender	Dummy	Female = 1
Age	Year of birth	Metric	Age
Age <sup>2</sup>	Age squared	Metric	Age squared
Education	Education in six categories	Ordinal	Six categories from "primary school education" to "university degree"
Income	If you add up your income, how high is your net monthly household income (after taxes and other deductions and including allowances)?	Metric	Monthly household income
Sport	Have you participated in sport at least 12 times in the last 12 months?	Dummy	Yes = 1
Cycling	Have you participated in cycling (as a sport) or mountain biking at least 12 times in the last 12 months?	Dummy	Yes = 1

Note. WTP = willingness to pay; WTP0 = ex ante willingness to pay; WTP1 = ex post willingness to pay.

## Data and Results

Table 2 reports the descriptive statistics of the sample. Half of the respondents (50.0%) were women, while the average age was 51.7 years. Almost a third of the respondents (32.3%) had completed higher education and average household income was over €2,700 per month. Three of the four persons were participating in sports, while 13.2% were active cyclists. The actual attendance of the event among the

**Table 2.** Descriptive Statistics.

Variable	Observations	Mean	SD	Min.	Max.
<b>Dependent</b>					
WTP0	572	3.584	10.298	0	108
WTP1	572	4.446	10.713	0	100
<b>Independent</b>					
Visit intention	572	0.199	0.400	0	1
Visit use	572	0.264	0.441	0	1
Media intention	572	0.472	0.500	0	1
Media use	572	0.528	0.500	0	1
Female	572	0.519	0.500	0	1
Age	572	51.713	18.241	16	91
Age <sup>2</sup>	572	3,006.4	1,833.0	256	8,281
Education	572	3.608	1.475	1	6
Income	572	2,923.7	1,472.0	100	11,000
Sport	572	0.757	0.429	0	1
Cycling	572	0.132	0.340	0	1

Note. WTP0 = ex ante willingness to pay; WTP1 = ex post willingness to pay.

panel members was 26.4%, while the visit intention was 19.9%. Over half of the respondents (52.8%) followed the event in the media, while 47.2% intended to follow it 2 months prior to the event.

The results show that the average WTP was €3.58 before the event and €4.45 after the event. This is an increase of 24.3%. The Wilcoxon-signed rank test for comparing matched samples (that are not normally distributed) dismisses the null hypothesis that WTP0 has the same median as WTP1 ( $p < .001$ ). The average WTP1 for the persons that had a WTP0 of 0 was €2.08. This increase was significant ( $p = .002$ ). By contrast, the average WTP1 of the persons with a positive WTP0 decreased by €2.02 compared with their average WTP0. However, this change was not significant ( $p = .17$ ). The average WTP of the persons who were willing to pay something decreased from €12.06 (for all people with a WTP > 0 at T0) to €11.30 (for all people with a WTP > 0 at T1).

Table 3 shows the number of respondents who were willing to pay something for hosting the event. This percentage changed significantly ( $p < .001$ ) from 29.7% ex ante to 39.3% ex post. Of the persons that ex ante did want to pay something for the event 23.6% did not want to pay anything after the event. Vice versa, a similar percentage (23.5%) of the persons that ex ante did not want to pay anything for the event did want to pay something ex post. The  $\chi^2$  test shows that the ex ante and ex post probabilities for a positive WTP differ significantly ( $p < .001$ ). Hence, the timing of contingent valuation measurement of a sport event is important for its outcome.

Further analysis shows that the gaps in WTP between persons (with the intention of) attending and nonattending the events, as well as (with the intention of)

**Table 3.** Percentage of Respondents With WTP > 0 at T0 and T1.

Variable	WTPI				
	No	Yes	Total	Percentage	
WTP0	No	307 76.4%	95 23.6%	402 100%	70.3%
	Yes	40 23.5%	130 76.5%	170 100%	29.7%
	Total	347 60.7%	225 39.3%	572	100%

Note. WTP = willingness to pay; WTP0 = ex ante willingness to pay; WTPI = ex post willingness to pay.

**Table 4.** Differences in Average WTP Before and After the Event for Four Groups of (Non)Visitors.

Visit	WTP0	WTPI	t	p	Test
No intention, no use	2.45 (0.458)	3.44 (0.527)	1.41	.160	Two sided
No intention, use	2.33 (0.533)	3.84 (0.668)	1.76	.040	One sided (+)
Intention, no use	4.56 (1.139)	4.93 (1.158)	-0.23	.588	One sided (-)
Intention, use	10.22 (2.039)	9.95 (1.812)	-0.10	.923	Two sided

Note. WTP = willingness to pay; WTP0 = ex ante willingness to pay; WTPI = ex post willingness to pay.

following and nonfollowing the event in the media, were significant and large both at the ex ante and ex post measurement. However, the change in WTP between the ex ante and the ex post measurement was not significant for any of these subgroups.

With two possible outcomes (yes or no) and two moments of measurement (ex ante and ex post), it is possible to distinguish between four groups of people,<sup>4</sup> for both attending the event (Table 4) and following it in the media (Table 5). Analysis of these groups shows a significant increase in WTP for people who visited the event but had no intention to do so. For all other groups, no significant change in WTP was measured. Additionally, within the group of persons with an intention to visit the event, persons who actually did visit the event had a significantly (much) higher WTP than those who in the end decided not to attend. This finding is also replicated in the group of people with the intention of following the event in the media but not in the groups with no intention to visit or follow the event.

We use regression modeling to measure the effect on WTP of covariates such as visiting or following the event. For a CVM data set with a relative large number of zeroes, a Tobit regression model can determine the effects of the independent variable on WTP. Alternatively, a hurdle model could be considered if a respondent's WTP anything at all depends on other factors than the actual amount of payment, especially with a relative large number of zeroes (Castellanos, García, & Sánchez,

**Table 5.** Differences in WTP Before and After the Event for Four Groups of (Non)Media Followers.

Media	WTP0	WTPI	t	p	Test
No intention, no use	1.16 (0.258)	2.16 (0.477)	1.85	.066	Two sided
No intention, use	2.55 (1.279)	2.30 (0.430)	-0.18	-.427	One sided (+)
Intention, no use	3.82 (1.144)	3.56 (0.882)	0.18	.431	One sided (-)
Intention, use	6.38 (0.908)	7.80 (1.009)	1.05	.295	Two sided

Note. WTP0 = ex ante willingness to pay; WTPI = ex post willingness to pay.

2011). Preliminary analyses showed that the same covariates are relevant in explaining the amount as well as whether or not one is willing to pay at all. For this reason, the Tobit model was preferred to a hurdle model to estimate effects of the socio-economic, sport-related, and “use” variables on residents’ WTP. For both T0 and T1, several Tobit models have been estimated, the outcomes of which are shown in Tables 6 and 7.

For both the ex ante and ex post regressions, four models are represented: a simple model with only visit and media as explanatory variables (intention at T0, realization at T1; Model 1); a full model with all explanatory variables (Model 2); and two final models with the use of backward elimination (dropping all variables with  $p > .05$ ), one model with visit, but without media (Model 3), and a second final model with both visit and media use at T1 and intention at T0 (Model 4).

The results show that visiting the event and following the event in the media are important determinants of WTP, as both are highly significant predictors ( $p < .01$ ) of WTP and the outcomes are robust for different model specifications. This holds true for both the ex ante and the ex post models. Also, the coefficients of the media variables in all Models 1, 2, and 4 are larger than those of the attendance variables, both for T0 and T1. Additionally, net household income has a positive and significant relation with WTP, whereas gender and sport participation are not significantly related with the WTP0.

## Discussion and Conclusion

The main aim of this research was to provide an ex ante and ex post contingent valuation of a large sport event, the big start of the 2016 Giro d’Italia in the Gelderland province in the Netherlands. Two months prior to the event and in the month immediately after the event are presentative panel of residents from Gelderland was asked to state their WTP for the event. The average WTP0 was €3.58, while the ex post average was €4.45, a difference of 24%. The results show that the ex ante and ex post chances of a positive WTP increased significantly from 29.7% to 39.3%. A simple extrapolation of these results would lead to a total ex ante valuation of this event of €5.8 million for the 1.6 million adult residents of the host area of

**Table 6.** Estimation Results of the Models for Ex Ante Willingness to Pay (WTP0).

Variable	Model 1	Model 2	Model 3	Model 4
Visit intention	10.47*** (2.956)	10.74*** (3.012)	16.99*** (2.829)	11.02*** (2.976)
Media intention	12.73*** (2.689)	13.11*** (2.764)		12.26*** (2.644)
Female		0.864 (2.427)		
Age		-0.422 (0.340)		
Age <sup>2</sup>		0.00360 (0.00341)		
Education		-1.794** (0.871)	-2.127** (0.851)	-1.934** (0.842)
Income		0.00191** (0.000816)	0.00210** (0.000829)	0.00202** (0.000817)
Sport		4.185 (3.011)		
Cycling		-0.510 (3.519)		
Constant	-22.36*** (2.390)	-14.24* (8.418)	-15.77*** (3.703)	-21.12*** (3.961)
$\sigma$	22.21*** (1.334)	21.68*** (1.298)	22.29*** (1.343)	21.81*** (1.307)
N	572	572	572	572
Log likelihood	-940.37	-933.81	-947.71	-936.32

Note. Standard errors in parentheses.

\* $p < 0.1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**Table 7.** Estimation Results of the Models for Ex Post Willingness to Pay (WTPI).

Variable	Model 1	Model 2	Model 3	Model 4
Visit use	6.311*** (2.261)	5.797** (2.283)	9.845*** (2.182)	6.106*** (2.264)
Media use	9.375*** (2.142)	10.23*** (2.208)		10.15*** (2.209)
Female		1.894 (2.024)		
Age		-0.650** (0.286)	-0.677** (0.283)	-0.695** (0.279)
Age <sup>2</sup>		0.00614** (0.00289)	0.00686** (0.00284)	0.00640** (0.00279)
Education		-0.610 (0.716)		
Income		0.00211*** (0.000673)	0.00193*** (0.000661)	0.00195*** (0.000653)
Sport		4.051 (2.490)		
Cycling		1.468 (2.960)		
Constant	-14.15*** (1.827)	-7.731 (7.009)	-1.423 (6.636)	-3.675 (6.557)
Σ	19.86*** (1.025)	19.44*** (1.000)	19.95*** (1.032)	19.56*** (1.007)
N	572	572	572	572
Log likelihood	-1,175.93	-1,165.82	-1,179.17	-1,164.05

Note. Standard errors in parentheses.

\*p < .1. \*\*p < .05. \*\*\*p < .01.

Gelderland, rising up to €7.1 million after the event. Also, the Wilcoxon-signed rank test shows that the medians of the WTP0 and WTP1 significantly differ. These findings echo those of Heyne et al. (2007) who also found a significant increase in WTP after the 2006 Football World Cup.

Our research shows that ex ante contingent valuations of the intangible effects of sport events may be an underestimation of the actual or ex post valuations. However, we would be extremely cautious to generalize these outcomes to other events. Moreover, we would not rule out the possibility of ex ante overestimations, since the difference in valuation may be a reflection of, for example, the level of success or other characteristics of the event. Also, the nature of WTP1 measurement is vulnerable for overestimation, since the hypothetical bias (as discussed in Walker & Mondello, 2007) is much more likely to occur after than before the event. Using a panel for the longitudinal approach for the CVM may limit this ex post effect. Another limitation of our research is the one-sided focus on positive externalities in willingness to pay, which does not allow for negative externalities. Our study does not take into account that a part of the region's residents may be willing to pay for not the hosting of the event (see, e.g., Hausman, 2012). This may be more concerning for a large-scale sport event crossing many public roads as the Giro d'Italia than for smaller events or those taking place in a demarcated area such as a stadium. Although the Tobit model addresses the zeroes in the data statistically, the results may therefore have a realistic upward bias. Additionally, the respondents may not be truly representative of the whole population. The use of a panel leads to a relatively small number of nonrespondents. Nevertheless, nonresponse could be for a sign of no interest, and thus a WTP of less than or equal to the mean WTP values of our sample. In that case, the presented WTPs could be interpreted as an upper bound estimate (see Johnson, Groothuis, & Whitehead, 2001).

Only for visitors of the event who initially had no intention to do so, a significant change between WTP0 and WTP1 is measured. Analysis also showed that within the group of persons with an intention to visit the event, average ex ante WTP was much higher for the individuals who actually did attend than for those who did not attend and a similar pattern was found for persons with regard to following the event in the media. While the first finding suggests that attracting visitors who initially had no intention to do so can increase WTP, the second finding means that, for people who say they have an intention to visit or follow the event, WTP0 maybe a predictor of the likelihood of actually visiting or following the event. To explore which other factors determine a person's actual behavior toward a sport event, in relation to WTP, more research (with a larger sample size) is needed.

Results of the Tobit regressions show that both visiting the event and following the event in the media lead to a significant higher WTP. Remarkably, the effect of the latter is larger than the former, both in intention (ex ante) and in realization. The regression results indicate that, at the individual level, media use is more important than visiting the event for residents' valuation of the event. In Table 6, visit intention has a higher coefficient in Model 3 than in Model 4. Table 7 shows similar results for

visit use and media use. These outcomes implicate that the model without a variable for media following (intention or realization) may overestimate the effect of attending the event. At the same time, that model may underestimate WTP for people who follow the event in the media. Our research shows that media usage for the valuation of the intangibles of an event such as the Giro d'Italia (free to visit but also free to watch on the television) may be more important than actual visiting the event, not only because it had a higher impact at the individual level but also because it is applicable to a larger share of the population (53% vs. 26%). Media coverage and media consumption of a sport event can therefore have a strong influence on the public's valuation of that event.

We conclude that the timing of the measurement of WTP affects the outcomes, which is valuable information, in particular for policy makers who have to decide whether or not to host or organize an event. Most of the variance in the total valuation can be attributed to a shift of people who went from a WTP of nill to a positive WTP. This can in part be contributed to the persons who visited or followed the event but did not have the intention to so. In this case, the ex post measurement was conducted immediately after the event. Later measurements may show other outcomes, with a fading memory of the event, as well as consequences of the event (such as financial implications) may have an effect on residents' valuation. An assessment whether WTP1 is stable over time and is beyond the scope of this article.

Further research is needed for explaining differences between WTP0 and WTP1 for sport events. Specific research questions may include “what event and nonevent factors determine a person's change from zero WTP to a positive WTP?” and “what causes can identify nonvisitors among the persons with the intention of visiting or following the event?” This research should also include other factors, such as the weather the (chances of) success of local participants or a home team or competitive balance, as has been suggested by Nalbantis, Pawlowski, and Coates (2017). The outcomes, in combination with more combined WTP0 and WTP1 studies, may help explaining and predicting the “real” WTP. We furthermore advise to include media consumption of an event into a broader concept of use, to complement the traditional “narrow” perception of use, which only includes actual visiting the event. Our findings show that media following, and therefore media coverage, can play a very important role in the residents' perception of a sport event's value, which is important information for both public policy makers and event organizers with regard to the bid, preparation, execution, and evaluation phases of events. To get a better understanding of the role of media coverage and media following in the valuation of events, more research is needed.

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## Notes

1. See, for example, Porter and Chin (2012) for an overview.
2. Longitudinal Internet Studies for the Social Sciences (LISS) is based on a true probability sample of individuals. For details on the LISS panel, we refer to Scherpenzeel (2011).
3. Age<sup>2</sup> represents age squared. It was included to accommodate nonlinearities.
4. These groups are (1) intention and use, (2) no intention and use, (3) intention and no use, and no intention and no use. Results of this analysis are available upon request.

## References

- Allmers, S., & Maennig, W. (2009). Economic impacts of the FIFA soccer world cups in France 1998, Germany 2006, and outlook for South Africa 2010. *Eastern Economic Journal*, 35, 500–519.
- Andersson, T. D., Armbrrecht, J., & Lundberg, E. (2012). Estimating use and non-use values of a music festival. *Scandinavian Journal of Hospitality and Tourism*, 12, 215–231.
- Armbrrecht, J. (2014). Use value of cultural experiences: A comparison of contingent valuation and travel cost. *Tourism Management*, 42, 141–148.
- Atkinson, G., Mourato, S., Szymanski, S., & Ozdemiroglu, E. (2008). Are we willing to pay enough to back the bid? Valuing the intangible impacts of London's bid to host the 2012 summer Olympic games. *Urban Studies*, 45, 419–444.
- Baade, R. A. (2006). A primer on the economic impact of mega-sports events and investments in sports infrastructure. In P. Rodriguez, S. Kesenne, & J. Garcia (Eds.), *Sports economics after fifty years: Essays in honour of Simon Rottenberg* (pp. 51–68). Oviedo, Spain: Ediciones de la Universidad de Oviedo.
- Baade, R. A., & Matheson, V. A. (2004). The quest for the cup: Assessing the economic impact of the world cup. *Regional Studies*, 38, 343–354.
- Barget, E., & Gouguet, J. J. (2007). The total economic value of sporting events theory and practice. *Journal of Sports Economics*, 8, 165–182.
- British Broadcasting Corporation. (2013). *London 2012: Olympics and Paralympics £528m Under Budget*. Retrieved from <http://www.bbc.com/sport/0/olympics/20041426>
- Carson, R. T. (2000). Contingent valuation: a user's guide. *Environmental science & technology*, 34, 1413–1418.
- Castellanos, P., García, J., & Sánchez, J. M. (2011). The willingness-to-pay to keep a football club in a city: How important are the methodological issues? *Journal of Sports Economics*, 12, 464–486.

- Coates, D., & Humphreys, B. R. (2008). Do economists reach a conclusion on subsidies for sports franchises, stadiums, and mega-events? *Econ Journal Watch*, 5, 294–315.
- Coates, D., & Szymanski, S. (2015). *Willingness-to-pay to host the Summer Olympic Games* (Working Paper). Baltimore County: University of Maryland.
- De Boer, W., Schoemaker, J., Dijk, B., Bekhuis, H., Janssen, L., & De Pater, M. (2016). *Evaluatie Giro Gelderland 2016 [Evaluation Giro Gelderland 2016]*. Nijmegen, the Netherlands: Hogeschool van Arnhem en Nijmegen.
- De Nooij, M., & Van den Berg, M. (2013). *The bidding paradox: Why rational politicians still want to bid for mega sports events*. Tjalling C. Koopmans Institute (Working Paper No. 13-08). Utrecht: Utrecht School of Economics.
- Downward, P., Dawson, A., & Dejonghe, T. (2009). *Sports economics*. Abingdon, England: Routledge.
- Gratton, C., Shibli, S., & Coleman, R. (2006). The economic impact of major sports events: A review of ten events in the UK. *The Sociological Review*, 54, 41–58.
- Gratton, C., & Taylor, P. (2002). *Economics of sport and recreation: An economic analysis*. Abingdon, England: Routledge.
- Green, D., Jacowitz, K. E., Kahneman, D., & McFadden, D. (1998). Referendum contingent valuation, anchoring, and willingness-to-pay for public goods. *Resource and Energy Economics*, 20, 85–116.
- Hausman, J. (2012). Contingent valuation: From dubious to hopeless. *The Journal of Economic Perspectives*, 26, 43–56.
- Heisey, K. (2009). Estimating the intangible benefits of hosting the 2016 Olympic and Paralympic games for potential bid cities: Berlin, Chicago, and San Francisco (Dissertation). German Sport University Cologne, Germany.
- Heyne, M., Maennig, W., & Suessmuth, B. (2007). Mega-sporting events as experience goods. *Hamburg Contemporary Economic Discussions*, 5, 203–220.
- Johnson, B. K., Groothuis, P. A., & Whitehead, J. C. (2001). The value of public goods generated by a major league sports team: The CVM approach. *Journal of Sports Economics*, 2, 6–21.
- Johnson, B. K., Mondello, M. J., & Whitehead, J. C. (2007). The value of public goods generated by a National Football League team. *Journal of Sport Management*, 21, 123–136.
- Kavetsos, G., & Szymanski, S. (2009). From the Olympics to the grassroots: What will London 2012 mean for sport funding and participation in Britain? *Public Policy Research*, 16, 192–196.
- Kavetsos, G., & Szymanski, S. (2010). National well-being and international sports events. *Journal of Economic Psychology*, 31, 158–171.
- Ma, S. C., Ma, S. M., Wu, J. H., & Rotherham, I. D. (2013). Host residents' perception changes on major sport events. *European Sport Management Quarterly*, 13, 511–536.
- Maennig, W. (2007). One year later: A re-appraisal of the economics of the 2006 soccer World Cup. *International Association of Sports Economists Working Paper Series*, No. 07-25.
- Maennig, W., & Porsche, M. (2008). The feel-good effect at mega sport events: Recommendations for public and private administration informed by the experience of the FIFA World Cup 2006. *Hamburg Contemporary Economic Discussions*, No. 18.

- Mitchell, R. C., & Carson, R. T. (1990). *Using surveys to value public goods: The contingent valuation method*. Washington, DC: Resources for the Future.
- Nalbantis, G., Pawlowski, T., & Coates, D. (2017). The fans' perception of competitive balance and its impact on willingness-to-pay for a single game. *Journal of Sports Economics*, 18, 479–505.
- Ohmann, S., Jones, I., & Wilkes, K. (2006). The perceived social impacts of the 2006 Football World Cup on Munich residents. *Journal of Sport & Tourism*, 11, 129–152.
- Porter, P. K., & Chin, D. M. (2012). Economic impact of sports events. In W. Maennig & A. S. Zimbalist (Eds.), *International handbook on the economics of mega sporting events*. Cheltenham, England: Edward Elgar.
- Scherpenzeel, A. (2011). Data collection in a probability-based internet panel: How the LISS panel was built and how it can be used. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, 109, 56–61.
- Statistics Netherlands (2017). *Regional statistics*. Retrieved from <http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=37230ned&D1=0,3-12,17&D2=10&D3=194&HDR=G2&STB=G1,T&VW=T>
- Vekeman, A., Meulders, M., Praet, A., Colpaert, J., & Van Puyenbroeck, T. (2012). Contingent valuation of a classic cycling race. *Journal of Sports Economics*, 16, 268–294.
- Walker, M., & Mondello, M. J. (2007). Moving beyond economic impact: A closer look at the contingent valuation method. *International Journal of Sport Finance*, 2, 149.
- Walton, H., Longo, A., & Dawson, P. (2008). A contingent valuation of the 2012 London Olympic Games: A regional perspective. *Journal of Sports Economics*, 9, 304–317.
- Wicker, P., Hallmann, K., Breuer, C., & Feiler, S. (2012). The value of Olympic success and the intangible effects of sport events—a contingent valuation approach in Germany. *European Sport Management Quarterly*, 12, 337–355.
- Wicker, P., Whitehead, J. C., Mason, D. S., & Johnson, B. K. (2016). Public support for hosting the Olympic summer games in Germany: The CVM approach. *Urban Studies*. 10.1177/0042098016675085.

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