International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:01, Issue:10

TEMPORAL RELIABILITY AND SURVEY TIMING IN CONTINGENT VALUATION RESEARCH

Pamela Wicker[1] and Bernd Frick[2,3]

[1]German Sport University Cologne, Germany
[2]University of Paderborn, Germany
[3]Castle Seeburg University, Austria

ABSTRACT

The contingent valuation method (CVM) has been frequently applied in environmental and sports research to assign a monetary value to non-market goods. This study examines the role of survey timing in CVM research and the temporal reliability of CVM estimates. The research context is the German Football Bundesliga where we estimate the monetary value of the public good 'major league city status' using CVM. Data were collected for twelve first division teams in three waves during the 2014/2015 season in the one-week-period around a game day (*n*=10,020). Thus, our survey timing measures capture both within-season and around-game day variation. The results of double-hurdle models show that only the binary measures of willingness-to-pay (WTP) and willingness-to-accept (WTA) were significantly affected by the day of the survey in relation to the game day. Survey timing did not affect the amount of WTP and WTA indicating that these estimates are temporally reliable.

Keywords: Contingent valuation method; willingness-to-pay; online survey; reliability

INTRODUCTION

The CVM is a method frequently applied in environmental and sports economics to evaluate the monetary value of public goods by considering passive-use values (Carson, 2000; Walker & Mondello, 2007).While the traditional economic assumption was that a good has to be physically used to get utility from it, it has been acknowledged that this is not the case for all goods (Carson, 2000). For example, in sport, consumers do not have to physically attend a sport event or a game of a professional sport team to get utility from it. They can also benefit from intangible effects created by the event/team such as talking about the event/team or feeling proud or happy when athletes are successful (e.g., Wicker, Whitehead, Johnson, & Mason, 2016). Recent

ISSN: 2455-8834

Volume:01, Issue:10

research showed increasing interest in the valuation of intangible effects and passive-use values using CVM (e.g., Johnson, Mondello, & Whitehead, 2007; Wicker, Hallmann, Breuer, & Feiler, 2012). CVM relies on survey data: respondents are confronted with a hypothetical scenario and asked for their WTP for the scenario to occur or to be avoided (Carson, 2000; Walker & Mondello, 2007).

CVM studies are often conducted to inform policy makers (Carson, 2000). For example, studies estimating the monetary value of public goods produced by professional sport teams have been conducted to legitimize public subsidies for stadia (e.g., Johnson et al., 2007). In order to be suitable for policy advice, results of such studies should be valid and temporally reliable (Carson, 2000). Therefore, it is surprising that the temporal reliability of CVM estimates has not received much attention in previous sport-related research (e.g., Fenn & Crooker, 2009). While it was shown that CVM estimates depend on the scenario and on other factors such as public goods, consumption, and socio-economic characteristics (e.g., Castellanos, Garcia, & Sanchez, 2011; Johnson, Mondello, & Whitehead, 2006; Wicker et al., 2016), a systematic examination of the role of survey timing has been largely neglected in previous research.

The purpose of this study is to examine the role of survey timing within CVM and the temporal reliability of CVM estimates, respectively. The research context for the present study is the Bundesliga, the top tier of professional football in Germany. The public good to be evaluated is *major league city status* (Johnson et al., 2007), a concept which has been borrowed from the North American Major Leagues. It can be applied to the Bundesliga where cities can lose their major league city status (in German: 'Erstligastadt') when their local team is relegated to the second division. While a German city can gain major league status again when the team is promoted, North American cities lose their major league status through relocation of teams that typically do not return to their home market. To systematically examine the role of survey timing, data were collected in three waves during the season in two-month intervals and throughout the one-week-period around a game day. In the CVM survey, respondents were presented with a WTP and a WTA scenario. We advance the following main research question: how does survey timing during the season and around a game day affect WTP and WTA? This study contributes to the body of research examining survey methodology and specifically to the stated preference literature.

RELATED LITERATURE

Temporal reliability

Following Mitchell and Carson (1988), reliability is referred to as the extent to which the variance of CVM estimates is a result of random sources or noise with greater noise being

ISSN: 2455-8834

Volume:01, Issue:10

associated with lower reliability. Thus, reliability reflects the "reproducibility and stability of a measure (Carson, Flores, & Meade, 2001, p. 195). There are three potential sources of variation: true variation in the population, only part of the population of interest is included in the sample, and specific procedures in the CVM survey (Mitchell & Carson, 1988). Given that one specific characteristic of a CVM survey is the timing of the survey, the focus of this study is on the latter source of variation. The examination of the role of survey timing is therefore rooted in the temporal reliability literature. Generally speaking, it is assumed that estimates are more temporally reliable when there is low variation over time (Reiling, Boyle, Phillips, & Anderson, 1990). This would be in line with the traditional economic assumption that individual preferences are stable over time (Stigler & Becker, 1977).

Temporal reliability in CVM studies

Previous CVM research has looked at the role of survey timing and temporal reliability of CVM estimates, respectively (for an overview see Carson et al., 2001). This research has predominantly been conducted in the field of environmental economics where various facets of survey timing were examined including time of the day, early versus late respondents, differences between surveys conducted in several years, and seasonal aspects.

Dickinson and Whitehead (2015) provided evidence that WTP statements are affected by the time of day: while students voted rationally in the morning, afternoon, and evening (i.e., the higher the fee, the lower the percentage of yes votes), they were insensitive to student fees during the night time. Dalecki, Whitehead, and Blomquist (1993) found significant differences between early and late survey respondents with regard to socio-demographic characteristics of the respondents, but not with regard to the outcome variable of interest supporting the assumption of temporal reliability. Notably, in these studies the time of the survey was selected by the respondents and not by the researcher.

Research examining differences between samples drawn in different years supports the notion of temporal reliability for various periods. For example, Berrens, Bohara, Silva, Brookshire, D., and McKee (2000, p. 82) concluded that "WTP functions are temporally stable" in their two samples which were drawn in the same month in two consecutive years. Similarly, Carson et al. (1997) and Whitehead and Hoban (1999) documented that their WTP estimates were not sensitive to survey timing when examining a two-year and five-year gap between surveys.

Reiling et al. (1990) added a seasonal component, i.e., benefits and costs of the outcome of interest occur seasonally, when looking analyzing the late black fly season (July to September) along the Penobscot River in Maine where black flies are a considerable pest. Their results confirmed temporal reliability of CVM estimates. In line with the review by Carson et al. (2001),

ISSN: 2455-8834

Volume:01, Issue:10

it can be concluded that most CVM studies that paid attention to survey timing were able to document temporal reliability of their estimates with a few exceptions (e.g., Dickinson & Whitehead, 2015). However, timing effects have not yet been analyzed for different points in time during a season of interest. The seasonal aspect may be particularly relevant in sport where the evaluation of teams may vary during the course of a season.

Effects of survey timing in sport-related CVM studies

In sport, there are at least two factors that can challenge the temporal reliability of CVM estimates: experience and emotions. Regarding experience, Süssmuth, Heyne, and Maennig (2010) argue that sport events are experience goods, i.e., populations with experience in non-use values produced by sport events are more likely to produce temporally reliable CVM estimates. However, gaining experience is more different for major sport events like the Olympic Games than for professional sport teams: while individuals usually only have a once-in-a-lifetime-chance to experience a major sport event, they have the opportunity to regularly experience a professional sport team (if they live in a city that hosts one). Thus, CVM estimates for sport teams should be more temporally reliable than those for major sport events.

Moreover, emotions may affect responses in CVM surveys, since they are at the core of spectator sport (Doyle, Filo, Lock, Funk, & McDonald, 2016). Fans of professional sport teams may complete CVM surveys more emotionally than surveys on other topics such as the environment, simply because they may follow the team closely. Moreover, the current situation of the team at the time of the survey may affect their responses. Thus, it is likely that emotions drive differences in CVM estimates when surveys are conducted at different points in time.

While the role of survey timing has not received much attention in previous research examining the monetary value of major league city status (e.g., Fenn & Crooker, 2009; Johnson et al., 2007), other sport-related CVM studies give at least some hints that survey timing matters. For example, CVM estimates were found to differ when surveys on the same topic have been conducted in different years: in research on the 2012 Summer Games, the same WTP questions were asked one year (Wicker et al., 2012) and a few weeks (Wicker, Kiefer, & Dilger, 2015) prior to the Games. When comparing the results of both studies (both based on representative population surveys), respondents' WTP was substantially higher in the latter study. Moreover, in previous research conducting CVM surveys before and after a major sport event, WTP was found to be higher after the event (Humphreys, Johnson, Mason, & Whitehead, 2016; Süssmuth et al., 2010). On the contrary, CVM estimates from 2003 and 2012 (random sampling) were found to be temporally reliable in a Spanish CVM study examining a professional sport team (Castellanos, Garcia, & Sanchez, 2014), supporting relevance of experience.

ISSN: 2455-8834

Volume:01, Issue:10

The above studies indicate that individual preferences regarding public goods produced by sport events are not stable over time – contrary to the traditional economic assumption (Stigler & Becker, 1977) and previous research in environmental economics (e.g., Berrens et al., 2000). Given the scarcity of research on professional sport teams, it is not clear whether those CVM estimates are driven by experience or emotions. The gap in the literature is particularly large for WTA estimates. The contribution of this study lies in a systematic examination of the role of survey timing and temporal reliability of CVM estimates for professional sport teams.

METHODOLOGY

Data collection

The data were collected during the 2014/2015 season of the German Football Bundesliga. The local population of 12 (out of 18) football clubs in the top division was surveyed. The selected teams capture the variety of teams including teams finishing in the top, middle, and bottom of the table in the previous season as well as teams being promoted to the first division after the 2013/2014 season. Data were collected in three waves during the season (December, February, April). For all teams a match day with a home game was chosen. Surveys were distributed throughout the one-week-period around the game day, i.e. three days, two days, and one day prior to the game day, on the game day, as well as one day, two days, and three days after the game day (Table 1).

Table 1. Survey by club and wave

2013/2014 season		Club	Survey around match days …			Sample size
Division	Final rank		First wave	Second wave	Third wave	
1	2	Borussia Dortmund	16	21	30	1,165
1	3	FC Schalke 04	15	22	28	405
1	4	Bayer Leverkusen	17	23	29	413
1	6	Borussia Mönchengladbach	16	21	30	1,262
1	7	FSV Mainz 05	15	22	30	510
1	11	Hertha BSC Berlin	17	23	29	707
1	12	Werder Bremen	15	23	31	1,006
1	13	Eintracht Frankfurt	16	21	29	468
1	14	SC Freiburg	15	22	29	536
1	16	Hamburger SV	16	22	30	589
2	1	FC Cologne	16	22	30	1,055
2	2	SC Paderborn	16	22	30	1,904
		Total				10,020

ISSN: 2455-8834

Volume:01, Issue:10

To include a wide cross-section of the population in the survey, online as well as paper-pencil questionnaires were distributed. The link to the online survey was published in various ways, for example by posting it on social media websites, official city websites, club websites, fan websites, and the websites of local radio stations – accompanied by a short introductory text. Various places were chosen where people with differing socio-demographic characteristics can be expected to show up and tend to wait (and should be more likely to answer a questionnaire). These places included town halls, administrative offices of citizens, employment offices, restaurants and bars, waiting rooms of doctors, and the area in front of the stadium (only on game day). Respondents completing the paper-pencil survey could submit the questionnaire into a cardboard box. The requirement for participation in the survey was that respondents were at least 16 years old. Altogether, *n*=11,281 people participated in the study. During the data cleaning, incomplete cases, people who only clicked through the survey, and cases with implausible answers were removed, leaving *n*=10,020 observations for the analysis.

Measures and variables

The variables used in this study are described in Table 2. WTP and WTA were assessed with two CVM scenarios which were presented in randomized order in the online surveys. For the paper-pencil-surveys, a similar number of the two versions of the questionnaire were printed and distributed to respondents. ONLINE captures the mode of survey completion and VERSION measures scenario order to control for ordering effects (Johnson et al., 2006). The WTP scenario was as follows:

> Suppose that Team XY's sporting performance is sufficient to stay in the first division. Suppose that an important sponsor of the team has to withdraw from his commitment due to financial problems right before the team applies for the license to play in the first Bundesliga. This leads to the team having substantial financial problems. Losing the sponsor would mean that a critical amount of revenues is missing in order to fulfill the licensing criteria. Therefore, it is unclear if Team XY can continue to play in the first division.
>
> Suppose that the only way to receive the license is a voluntary fund which is set up on short notice and which is used to solve the financial problems and ensure receipt of the license for the first division.

Then, respondents were asked to state whether they would be willing to contribute to this voluntary fund (WTP_binary) and if so, how much (WTP). Similar to previous research (Owen, 2006), an open question format was preferred over a payment card format because due to the

ISSN: 2455-8834

Volume:01, Issue:10

scarcity of European research the proposed range of WTP is unclear. Regarding the payment vehicle, a voluntary fund (Castellanos et al., 2011) was preferred over fan bonds (Wicker et al., 2016) and taxes (Johnson et al., 2006) to avoid an investment component and ensure the plausibility of the CVM scenario (Carson, 2000).

The WTA scenario read as follows:

> Suppose that Team XY faces relegation on the last game day and definitely has to win the match to stay in the first division. How much money would it take as a one-off payment to make you indifferent about the outcome of this match?

Similarly, two variables measuring positive WTA (WTA_binary) and the amount of WTA (WTA) resulted from the scenario.

The focus of the analysis is on the two sets of variables measuring survey timing. The first set measures month of the survey (WAVE1, WAVE2, WAVE3) and captures timing effects during the season. The second set covers the one-week-period around a game day (GAMEDAY-3 to GAMEDAY+3) and allows examining the sensitivity of stated WTP and WTA to the specific day of the survey.

Since CVM estimates may also be affected by team performance, public goods, football consumption, and socio-demographic characteristics (e.g., Fenn & Croker, 2009; Johnson et al., 2007; Wicker et al., 2016), we controlled for these factors. Previous (REL_THREAT), current (RANK, WON), and expected team performance (HET) is included. The latter heterogeneity measure reflects the implied probability that the home team will win as derived from betting odds (Deutscher, Frick, Gürtler, & Prinz, 2013). Moreover, a set of variables measuring public goods (IDENTIFY, FAN, HAPPY, SAD, ROLEMODEL, TALK, IMP_PER, IMP_CITY, IMP_BUS), football consumption (HOME, AWAY, SKY), and socio-demographic characteristics of the respondents (MALE, AGE, AGE_SQ, TENURE, SATISFACTION, EDUCATION, INCOME, DISTANCE) is included (Table 2).

ISSN: 2455-8834

Volume:01, Issue:10

Table 2. Description of variables

Variable	Description
WTP_binary	Respondent has stated a positive WTP (1=yes)
WTP	Amount of stated WTP if WTP>0 (in €)
WTA_binary	Respondent has stated a positive WTA (1=yes)
WTA	Amount of stated WTA if WTA>0 (in €)
WAVE	Survey wave (1=December; 2=February; 3=April)
GAMEDAY	Day of survey completion (from 3 days prior to game day to 3 days after the game day)
REL_THREAT	Threat of relegation; average table rank on the last five match days of the previous season
WON	Team has won the previous match (1=yes)
RANK	Team's table rank on day of survey completion
HET	Expected heterogeneity of team performance (-1=away team win; +1=home team win)
IDENTIFY	I identify with Team XY (1=totally agree/somewhat agree)
FAN	I am a fan of Team XY (1=totally agree/somewhat agree)
HAPPY	I am happy when Team XY wins (1=totally agree/somewhat agree)
SAD	I am sad when Team XY loses (1=totally agree/somewhat agree)
ROLEMODEL	The players from Team XY are role models (1=totally agree/somewhat agree)
TALK	I talk regularly about Team XY with my friends or colleagues (1=totally agree/somewhat agree)
IMP_PERS	It is important for me that Team XY plays in the first division (1=totally agree/somewhat agree)
IMP_CITY	It is important for the city that Team XY plays in the first division (1=totally agree/somewhat agree)
IMP_BUS	It is important for the local businesses that Team XY plays in the first division (1=totally agree/somewhat agree)
HOME	Number of home games attended in the last 12 months
AWAY	Number of away games attended in the last 12 months
SKY	Respondent has a SKY Bundesliga subscription (1=yes)
MALE	Gender (1=male)
AGE	Age (in years)
AGE_SQ	Age squared
TENURE	Number of years living in the city
DISTANCE	Distance living away from the team's stadium (in km)

ISSN: 2455-8834

Volume:01, Issue:10

SATISFACTION	Level of satisfaction with life in general (0=totally dissatisfied; 10=totally satisfied)
EDUCATION	Educational level (1=at least university entrance degree)
INCOME	Individual monthly net income (in €)
VERSION	Version of the questionnaire (0=1. WTA, 2. WTP; 1=1. WTP, 2. WTA)
ONLINE	Mode of survey completion (1=online; 0=paper-pencil)

Sample weights

The use of convenience sampling resulted in an initial sample where the share of males was higher (62% vs. 49%) and the average age was lower (31 vs. 44 years) compared with the German population (Federal Statistical Office, 2014). For these differences in sample composition the same explanations like in previous sport-related CVM studies can be advanced (Wicker et al., 2015): males and younger people use the internet to a greater extent (van Deursen, van Dijk, & ten Kloster, 2015) and may show a higher interest in sport because they are more likely to participate themselves (Humphreys and Ruseski, 2007). Weights were used to make the sample more representative of the German population (e.g., Wicker et al., 2016). City-specific weights for age and gender were computed based on the most recent population statistics which were retrieved from each city's statistical office. The empirical analysis is based on the weighted sample (Table 3).

Table 3. Summary statistics (weighted sample; n=10,020)

Variable	Mean	SD	Min	Max
WTP_binary	0.397	---	0	1
WTP	266.52	342.91	1	1000
WTA_binary	0.472	---	0	1
WTA	796.82	371.64	1	1000
WAVE1	0.422	---	0	1
WAVE2	0.323	---	0	1
WAVE3	0.254	---	0	1
GAMEDAY-3	0.141	---	0	1
GAMEDAY-2	0.113	---	0	1
GAMEDAY-1	0.099	---	0	1
GAMEDAY	0.282	---	0	1
GAMEDAY+1	0.134	---	0	1
GAMEDAY+2	0.128	---	0	1

ISSN: 2455-8834

Volume:01, Issue:10

GAMEDAY+3	0.103	---	0	1
REL_THREAT	11.85	6.50	2	20.4
WON	0.249	---	0	1
RANK	10.80	4.36	3	18
HET	0.02	0.10	-0.72	0.59
IDENTIFY	0.620	---	0	1
FAN	0.671	---	0	1
HAPPY	0.760	---	0	1
SAD	0.475	---	0	1
ROLEMODEL	0.394	---	0	1
TALK	0.612	---	0	1
IMP_PERS	0.626	---	0	1
IMP_CITY	0.825	---	0	1
IMP_BUS	0.665	---	0	1
HOME	5.59	7.26	0	40
AWAY	1.46	3.80	0	30
SKY	0.380	---	0	1
MALE	0.519	---	0	1
AGE	45.79	17.76	16	95
AGE_SQ	2412.44	1710.89	256	9025
TENURE	35.74	21.00	0	95
LN(DISTANCE)	2.33	1.07	-0.69	4.61
SATISFACTION	7.22	2.53	0	10
EDUCATION	0.527	---	0	1
LN(INCOME)	7.37	0.84	5.52	8.41
VERSION	0.409	---	0	1
ONLINE	0.663	---	0	1

Empirical analysis

The empirical analysis of this study is three-fold. First, the distribution of the WTP and WTA variables showed some relatively high values. These values would lead to biased results and were, therefore, capped at €1,000 – a procedure applied in previous research (Wicker et al., 2015). Second, summary statistics for WTP and WTA by wave and by survey day will be provided. While it would be possible to test for statistically significant differences among waves and surveys days using analysis of variances, regression analyses were preferred because they

ISSN: 2455-8834

Volume:01, Issue:10

allow including control variables and isolating timing effects. Put differently, they reveal whether differences in WTP or WTA can be attributed to sample composition or survey timing.

Third, two double-hurdle models are estimated to examine the effect of survey timing on WTP and WTA. Like in other CVM studies (e.g., Wicker et al., 2016), the distributions of WTP and WTA are characterized by a high proportion of zeros which affects the choice of the estimator (Castellanos et al., 2011). The double-hurdle model (Cragg, 1971) takes the two-step decision into account and models first the decision to pay/accept (WTP_binary; WTA_binary) and afterwards the amount of money (WTP; WTA). All variables from Table 2 are included as independent variables after a multicollinearity check using correlation analysis. Team dummies could not be included because of collinearity with RANK and REL_THREAT (the respective models did not converge). For the other independent variables the highest correlation was 0.5 for HAPPY and SAD and, thus, well below the suggested threshold of 0.9 (Tabachnick & Fidell, 2007).

RESULTS AND DISCUSSION

Table 4 shows the summary statistics for WTP and WTA by survey wave and survey day. As expected (Carson et al., 2001), WTA estimates exceed the WTP values. Starting with wave, a similar share of respondents reported a positive WTP and WTA in all three waves. Minor differences can be observed for the amount of stated WTP and WTA with the lowest figures being reported in the second wave in February 2015. Turning to survey day, the share of respondents reporting a positive WTP seems to be lower on the game day compared with the three-day-period before and after the game day. This is not the case for positive WTA where no pattern can be observed. Average WTP increases towards the game day and decreases on the game day and after it. For average WTA no pattern can be identified.

ISSN: 2455-8834

Volume:01, Issue:10

Table 4. Mean WTP and WTA by wave and survey day (weighted sample; n=10,020)

	WTP and WTA by wave						
	WAVE1	WAVE2	WAVE3				
WTP_binary	0.389	0.432	0.364				
WTP	292.85	227.47	278.58				
WTA_binary	0.481	0.445	0.491				
WTA	792.73	777.23	827.64				
	WTP and WTA by survey day						
	GAMEDAY-3	GAMEDAY-2	GAMEDAY-1	GAMEDAY	GAMEDAY+1	GAMEDAY+2	GAMEDAY+3
WTP_binary	0.444	0.360	0.462	0.318	0.421	0.415	0.468
WTP	252.61	242.16	325.98	314.93	250.19	228.33	219.69
WTA_binary	0.446	0.444	0.528	0.464	0.502	0.547	0.372
WTA	847.61	722.60	756.50	809.61	795.83	886.29	701.88

Table 5 displays the results of the two double-hurdle models. In line with previous studies (e.g., Johnson et al., 2007; Wicker et al., 2016), public goods, football consumption, and income are positively related with WTP. Given the credibility of the results of the control variables, an investigation of timing effects seems feasible. Model 1 shows that positive WTP differs among survey waves: respondents who completed the survey in April 2015 were significantly less likely to report a WTP greater than zero than those completing the survey in February. Also, the survey day in relation to the game day affects the binary WTP measure: the likelihood of reporting a positive WTP is significantly higher three days and one day prior to the game day and on all three days after the game day. The amount of reported WTP is affected neither by survey wave nor survey day in relation to the game day.

Model 2 reveals that survey wave has no significant effect on the likelihood of reporting a positive WTA. The pattern of survey day effects is similar to Model: respondents were significantly more likely to state a WTA greater than zero three and two days prior to the game day as well as one day and two days after the game day. Neither wave nor survey day have a statistically significant effect on the amount of WTA.

ISSN: 2455-8834

Volume:01, Issue:10

Table 5. Double-hurdle models for WTP and WTA (weighted sample; n=10,020)

	Model 1: WTP		Model 2: WTA	
	WTP_binary	WTP	WTA_binary	WTA
WAVE1	-0.151	470.5	0.144	3.754
WAVE2	REF	REF	REF	REF
WAVE3	-0.220**	821.8	0.0629	38.29
GAMEDAY-3	0.313***	-650.6	0.327***	40.45
GAMEDAY-2	0.164	-765.6	0.297***	-90.97
GAMEDAY-1	0.417**	1280.1	0.472***	0.935
GAMEDAY	REF	REF	REF	REF
GAMEDAY+1	0.296***	-887.2	0.369***	45.27
GAMEDAY+2	0.253***	-1613.3	0.325***	55.02
GAMEDAY+3	0.288*	11.91	0.0821	-61.72
REL_THREAT	-0.0225***	-51.68	-0.0184***	-5.575***
WON	-0.196***	24.01	-0.0621	-8.694
RANK	-0.0221**	-35.24	0.00650	7.488**
HET	0.448	1541.8	0.552*	76.37
IDENTIFY	0.525***	3834.4	0.0693	156.5***
FAN	0.319**	11881.2	0.0322	192.8***
HAPPY	0.407***	-3038.7	0.560***	104.5
SAD	0.250***	2249.8*	0.161**	42.99**
ROLEMODEL	0.204***	674.6	-0.0971*	60.38***
TALK	0.338***	-46.84	0.357***	79.19
IMP_PERS	-0.00973	551.8	0.472***	34.82
IMP_CITY	0.284**	-791.3	0.243**	-84.47**
IMP_BUS	-0.171*	1067.5	-0.00948	66.86**
HOME	0.00922	213.8**	0.0187***	0.756
AWAY	0.0225**	101.5	-0.000533	8.858***
SKY	0.156**	1582.2	0.0159	-0.967
MALE	-0.0584	2864.7*	0.142**	8.443
AGE	-0.00877	129.6	-0.0425***	18.81***
AGE_SQ	0.0000280	-1.480	0.000264	-0.244***
TENURE	-0.00320	-46.53*	0.000683	1.163
LN(DISTANCE)	0.0329	358.0	0.0719**	0.588
SATISFACTION	-0.00425	-168.1	-0.0465***	16.81**
EDUCATION	0.0658	-1073.9	0.0126	7.805
LN(INCOME)	0.141***	2357.0*	0.0755*	0.841

ISSN: 2455-8834

Volume:01, Issue:10

	Model 1: WTP		Model 2: WTA	
	WTP_binary	WTP	WTA_binary	WTA
VERSION	0.162**	-1669.2*	0.201***	-13.59
ONLINE	0.0283	789.4	0.0937	50.19*
Constant	-2.175***	-46055.1*	-1.117***	-274.6
Sigma_cons	1545.3***		328.6***	
	(438.2)		(13.04)	
Log Likelihood	-34,567.7		-29,659.8	
Wald	949.0		1202.4	

Note. Displayed are the coefficients (models estimated with robust standard errors and via maximum likelihood); REF=reference category; ***p<0.01; **p<0.05; *p<0.1.

There are several points to take away from these results. First, although WTA measures exceed the WTP estimates, the effects of survey timing on WTP and WTA are similar. Second, only the binary measures of WTP and WTA are affected by survey timing and specifically, the survey day in relation to the game day. Game days were different from all other days in that respondents were less likely to be willing to pay or accept something on these days. Third, the amount of reported WTP and WTA is not significantly affected by survey timing indicating that these measures are temporally reliable and a result of stable preferences over time (Stigler & Becker, 1977). Altogether, it seems that the less temporally reliable binary measures are driven by emotion, while the temporally reliable continuous measures are driven by experience.

CONCLUSION

This study investigated systematically the role of survey timing and temporal reliability of CVM estimates for professional sport teams. Our contribution lies in a detailed analysis of timing effects both during the course of a season and around a game day. The findings of this study have implications for CVM research in the sense that it should be checked whether the public good to be valued is more likely to be driven by experience or emotions. Since many studies in the social sciences rely on (online) survey, this study confirms the conclusion of previous research that "timing does matter" (Faught, Whitten, & Green, 2004, p. 26).

This study has some limitations which represent avenues for future research. It shares the same limitation of previous research (e.g., Carson et al., 1997) because it only relied on a multi-point cross-sectional sample instead of a longitudinal sample. While the latter would allow using test-retest procedures, respondents should not be able to recall their answers when using such procedures (Reiling et al., 1990). Thus, the recommendation to collect longitudinal data may be inappropriate, particularly because of the present survey design with the one-week period around

ISSN: 2455-8834

Volume:01, Issue:10

a game day and it is still unclear how much time should elapse between surveys. Future research should apply the present research design to other sports leagues and countries to confirm or challenge the findings of this study.

ACKNOWLEDGMENTS

A previous version of this manuscript has been presented at the 2015 WEAI meetings in Honolulu, Hawaii. The authors would like to thank the students who assisted in the data collection. These are Manuel Herter, Jannik Disch, Felix Mertesacker, Andreas Pröpping, Sebastian Kentsch, Anders Tischer, Philipp Straub, Philipp Elsmann, Natascha Kanke, Konstantin Müller, Jonas Messerschmidt, Dirk Semmelroth, and Sebastian Klefisch.

REFERENCES

Allmers S, Maennig W. Economic impacts of the FIFA Soccer World Cups in France 1998, Germany 2006, and outlook for South Africa 2010. Eastern Economic Journal. 2009;35:500-19.

Berrens RP, Bohara AK, Silva CL, Brookshire D, McKee M. Contingent values for New Mexico instream flows: With tests of scope, group-size reminder and temporal reliability. Journal of Environmental Management. 2000;58:73-90.

Bjertnaes OA. The association between survey timing and patient–reported experiences with hospitals: results of a national post survey. BMC Medical Research Methodology. 2012;12:13.

Carson RT. Contingent valuation: A user's guide. Environmental Science and Technology. 2000;34:1413-18.

Carson RT, Flores NE, Meade NF. Contingent valuation: Controversies and evidence. Environmental and Resource Economics. 2001;19:173-210.

Carson RT, Hanemann WM, Kopp RJ, Krosnick JA, Mitchell RC, Presser S, et al. Temporal reliability of estimates from contingent valuation. Land Economics. 1997;73:151-63.

Castellanos P, García J, Sánchez J. The willingness to pay to keep a football club in a city: How important are the methodological issues? Journal of Sports Economics. 2011;12:464-86.

ISSN: 2455-8834

Volume:01, Issue:10

Castellanos P, García J, Sánchez J. Economic crisis, sport success and willingness to pay: The case of a football club. Sport, Business and Management: An International Journal. 2014;4:237-49.

Coates D, Humphreys BR. The effect of professional sports on earnings and employment in the services and retail sectors in US cities. Regional Science and Urban Economics. 2003;33:175-98.

Cragg JG. Some statistical models for limited dependent variables with application to the demand for durable goods. Econometrica. 1971;39:829-44.

Dalecki MG, Whitehead JC, Blomquist GC. Sample non-response bias and aggregate benefits in contingent valuation: an examination of early, late and non-respondents. Journal of Environmental Management. 1993;38:133-43.

Deutscher C, Frick B, Gürtler O, Prinz J. Sabotage in tournaments with heterogeneous contestants: Empirical evidence from the soccer pitch. Scandinavian Journal of Economics. 2013;115:1138-57.

Dickinson DL, Whitehead JC. Dubios and dubioser: contingent valuation and the time of the day. Economic Inquiry. 2015;53:1396-400.

Doyle J, Filo K, Lock D, Funk DC, McDonald H. Exploring PERMA in spectator sport: Applying positive psychology to examine the individual-level benefits of sport consumption. Sport Management Review (in press). 2016;DOI: 10.1016/j.smr.2016.04.007

Faught KS, Whitten D, Green KW. Doing survey research on the internet: Yes, timing does matter. Journal of Computer Information Systems. 2004;44:26-34.

Federal Statistical Office. Bevölkerungsentwicklung. 2014. Retrieved September 16, 2014 from https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerung.html

Fenn AJ, Crooker JR. Estimating local welfare generated by an NFL team under credible threat of relocation. Southern Economic Journal. 2009;76:198-223.

Humphreys BR, Johnson BK, Mason DS, Whitehead JC. Estimating the value of medal success in the Olympic Games. Journal of Sports Economics (in press). 2016;DOI: 10.1177/1527002515626221

Humphreys BR, Ruseski JE. Participation in physical activity and government spending on parks and recreation. Contemporary Economic Policy. 2007;25:538-52.

Johnson BK, Mondello MJ, Whitehead JC. Contingent valuation of sports: Temporal embedding and ordering effects. Journal of Sports Economics. 2006;7:267-88.

Johnson BK, Mondello MJ, Whitehead JC. The value of public goods generated by a National Football League team. Journal of Sport Management. 2007;21:123-36.

Mitchell RC, Carson R. Using surveys to value public goods: The contingent–valuation method. Washington, DC: Resources for the Future; 1988.

Owen JG. The intangible benefits of sports teams. Public Finance and Management. 2006;6:321-45.

Reiling SD, Boyle KJ, Phillips ML, Anderson MW. Temporal reliability of contingent values. Land Economics. 1990;66:128-34.

Stigler GJ, Becker GS. De gustibus non est disputandum. American Economic Review. 1977;67:76-90.

Süssmuth B, Heyne M, Maennig W. Induced civic pride and integration. Oxford Bulletin of Economics and Statistics. 2010;72:202-20.

Tabachnick BG, Fidell LS. Using multivariate statistics. Boston, MA: Allyn & Bacon; 2007.

van Deursen AJAM, van Dijk JAGM, ten Kloster PM. Increasing inequalities in what we do online: A longitudinal cross sectional analysis of Internet activities among the Dutch population (2010 to 2013) over gender, age, education, and income. Telematics and Informatics. 2015;32:259-72.

Walker M, Mondello MJ. Moving beyond economic impact: A closer look at the contingent valuation method. International Journal of Sport Finance. 2007;2:149-60.

Whitehead JC, Hoban TJ. Testing for temporal reliability in contingent valuation with time for changes in factors affecting demand. Land Economics. 1999;75:453-65.

Wicker P, Hallmann K, Breuer C, Feiler S. The value of Olympic success and the intangible effects of sport events – A contingent valuation approach in Germany. European Sport Management Quarterly. 2012;12:337-55.

ISSN: 2455-8834

Volume:01, Issue:10

Wicker P, Kiefer S, Dilger A. The value of sporting success to Germans: Comparing the 2012 UEFA Championships with the 2012 Olympics. Journal of Business Economics. 2015;85:897-919.

Wicker P, Whitehead JC, Johnson BK, Mason DS. Willingness-to-pay for sporting success of Football Bundesliga teams. Contemporary Economic Policy. 2016;34:446-62.

