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Elina Lampi* and Matilda Orth**

Abstract

This study investigates whether the introduction of an entrance fee affects visitor composition at a state funded museum in Sweden. While entrance to the museum was still free, we conducted a survey to collect information about visitor characteristics and used the Contingent Valuation (CV) method to measure visitors' willingness to pay (WTP) for a visit. The results of the CV survey show that even a very low entrance fee level results in a significant reduction in several target groups that the museum has policy directives to reach. Additionally, we conducted another survey after the introduction of the fee. Thus, we have a unique opportunity to test the validity of CV in the context of a cultural good. The comparison between the predicted results from the CV and the observed change in visitor composition after the introduction of the fee implies that CV does predict a majority of the changes successfully.

Keywords: free entrance, visitor composition, museum, natural experiment, stated preferences.

JEL Classification: D12, H41, Z11

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1. Introduction

A highly debated issue in many countries is whether or not publicly financed museums should offer free entrance. Many of the public museums in Britain and Ireland started doing this in 2001, while Sweden did in 2004-2005 at 19 state funded museums (Swedish Art Council, 2006).¹ As a result, several of the Swedish museums included in the reform more than doubled their number of visitors (Swedish Art Council, 2006), in line with previous experiences of free entrance reforms.² However, there is still a lack of knowledge regarding the effects of free entrance on visitor composition (Falconer and Blair, 2003).

All public museums in Sweden have policy directives from the Swedish government to reach more visitors and especially those who rarely visit museums (Swedish Government, 1996). These visitors are men, young people, immigrants, people who live in the suburbs, people with low levels of education, and people with low income (Museum of World Culture, 2004b; Swedish Art Council, 2006). A similar policy document exists for example in the UK (Falconer and Blair, 2003).³ The Swedish free entrance reform was only in effect for a couple of years. Due to a change in government regime, the reform was abolished in January 1st, 2007 for adults, while children and adolescents younger than 20 continue to get in free to the museum. While each museum was permitted to decide over its fee levels, the policy directives to reach certain target groups remained. At the same time, the government grants to the 19 public museums decreased by 43 million SEK per year (Swedish Government, 2006).⁴ This policy change was controversial and is still highly debated.

The purpose of the present study consists of three parts: The first objective is to investigate whether a public free entrance museum, namely the Museum of World Culture in Sweden, is able to follow the government directive to attract target visitors after introducing an entrance fee. While entrance to the museum was still free, we conducted a survey to collect information about

¹ Other countries in Europe that have introduced free entrance at public museums during the last five years are among others France, Hungary, Germany, and Denmark (Swedish Art Council, 2006).

² The total number of visitors in all 19 museums included in the free entrance reform increased by 84 percent during 2005 compared to 2004 (Swedish Art Council, 2008).

³ The U.K. government has promoted the free access to museums because they believe that free entrance is consistent with their "access and social inclusion" objectives, i.e. to have museum visitors from all social groups (Falconer and Blair, 2003).

⁴ 6.98 SEK = 1 USD (2006-12-01).

visitor characteristics and used the Contingent Valuation (CV) method to measure visitors' willingness to pay (WTP) for a visit to the museum.⁵ Using these results we can predict possible changes in visitor composition in general, and in the target groups in particular, at several potential fee levels. The second objective is to evaluate what actually happened after the introduction of the fee. We therefore conducted another survey to obtain information about socio-economic characteristics of those who actually ended up paying the entrance fee to the museum. We then evaluate how the introduction of the entrance fee influenced the ability of the museum to follow the policy directives imposed by the government. The third objective is to test the validity of the CV method in the context of a cultural good. We do that by investigating whether and if so to what extent the predicted changes in visitor composition based on the results of the CV survey differ from the actual changes observed after the introduction of the entrance fee.

The present study contributes to the existing literature in the following ways: Since an entrance fee was introduced in reality, we act on the unique opportunity to conduct surveys both before and after the museum began charging an entrance fee. Thus, we use both a natural experiment and stated preferences to investigate changes in visitor composition and to test the validity of the CV method.⁶ Moreover, as far as we know, the present study is the first to analyze visitor composition at museums and relate them to governmental policy directives. As free entrance and various policy reforms exist in several countries (Falconer and Blair, 2003), the results of the present paper are of interest in a broader context, especially for cultural policy makers in other countries.

Several previous studies have used the CV method to investigate WTP for maintaining a museum (Santagata and Signorello, 2000; Sanz et al., 2003; Thomo, 2004). These studies focus on both visitors and non-visitors, while we focus only on visitors. A number of other studies have investigated both the benefits and the drawbacks of having a museum entrance fee financed by public funds. One argument for free entrance is that in the absence of congestion, the

⁵ The Contingent Valuation method is a stated preference method where the respondents are asked to state their WTP for a specific (most often public) good. For more information about the CV method, see Mitchell and Carson (1989).

⁶ A number of studies compare the results of revealed preferences studies on for example visits to national parks with stated preference surveys, but these are often travel cost surveys (Carson et al., 1996). Furthermore, they have not had the unique opportunity to conduct a stated preference survey before an actual price change.

marginal cost of an additional visitor is zero for a public good (Willis, 2003). On the other hand, O'Hagan (1995) and Bailey and Falconer (1998) claim that marginal cost is zero only in the short run. Another argument often presented in support of free entrance is that it makes the socio-economic composition of visitors more heterogeneous. However, according to O'Hagan (1995) and the Department of Culture, Media and Sport in U.K. (1997), a large majority of those who visit museums with no fee are people from the highest socio-economic group. This means that people with lower income finance the maintenance and services of museums they very seldom visit. Moreover, O'Hagan (1995) also argues that it is a myth that museums with free entrance have visitors from all income groups and that the entrance fee is not the reason why people from lower income groups attend museums less often, while Anderson (1998) finds that museums that charge for entrance lose visitors. On the other hand, Bailey and Falconer (1998) discuss that entrance fees can actually increase access to museums. Revenues from fees may for example be used to increase opening hours or the quality of exhibitions.⁷

The findings of the CV survey predict that an introduction of even a low entrance fee (40 SEK) should result in a significant reduction in visits in four out of the six target groups included in the government directive, i.e. men, immigrants, low-income visitors, and visitors who live in the suburbs. The findings from our second survey, carried out after the introduction of the entrance fee, confirm the predicted changes. Thus, the validity test of the CV method shows that the method is successful in capturing changes in visitor composition for a quasi-public good such as a museum visit.

The rest of the paper is structured as follows. The Museum of World Culture is presented in Section 2, followed by a description of the surveys in Section 3. Section 4 shows empirical results before and after the introduction of the entrance fee and the results of the validity test of the CV method. Section 5 concludes the paper.

⁷ There are also other studies about museums investigating pricing rules for entry fees (see e.g. Frey, 1994), whether it is profitable to have an additional free day at a museum (Steiner, 1997), and how much "value for the money" people get from visiting a museum (Ashworth and Johnson, 2006).

2. The Museum of World Culture

The Museum of World Culture, located in Gothenburg, Sweden, is one of 19 state funded museums and one of four National Museums of World Culture in Sweden. The opening date was January 1st, 2005 and from the start it was set to offer free entrance. According to policy directives, the Museum of World Culture should try to reach people who do not visit museums frequently, namely men, young people, first and second generation immigrants, people living in the suburbs, people with lower levels of education, and people with low income (Museum of World Culture, 2004a and 2004b). Five different surveys at the museum report a mean visitor age of 41 and that 61 percent of the visitors are women, 87 percent were born in Sweden, 41 percent live in the city center of Gothenburg, 60 percent have a university degree, 55 percent have a job, and 25 percent are students (Exquiro Market Research, 2006). The Museum of World Culture is one of the museums that introduced an entrance fee on January 1st, 2007. The fee was decided at 40 SEK (about 7 USD at the time of the survey) for visitors older than 19 and gave access to the museum for the whole year. It is worth noting that the fee level of 40 SEK is low compared to other activities; for example, a movie ticket costs twice as much. In addition, the museum kept admission free on Wednesday evenings between 5p.m. and 9p.m.⁸ Since the museum had no entrance fee when it opened, it is particularly appropriate for analyzing the effects of introducing a fee, since visitors are then less likely to have preconceived thoughts (caused by previous fee levels) that may affect their WTP.

3. The Survey

We conducted two surveys at the museum in order to evaluate whether the visitor composition changed after the introduction of the entrance fee. The first survey was carried out during the fall of 2006 while entrance was still free. The second was done during the spring of 2007 after the introduction of the fee. The first survey collected information about visitor characteristics and WTP for a visit, using the CV method. When the good is familiar (as we believe a museum visit

⁸ The museum decided to keep Wednesday evenings free after we had already conducted our study. Therefore, our follow-up study was conducted only on days with an entrance fee.

is to a person who actually visits the museum), the CV method is appropriate to use (Mitchell and Carson, 1989).

The WTP question to the museum visitors read:

Assume that the Museum of World Culture would have charged you for your visit to the museum *today*. Once paid, the ticket would give you free entry to the museum for the next 12 months. All visitors older than 19 have to pay the same entrance fee. What is your *maximum* willingness to pay for entrance to the museum?

At most..... SEK

In addition to the WTP question and several socio-economic questions, we asked how often the respondents consume different kinds of cultural activities and how pleased they were with their visit to the museum. The same survey was used in the spring of 2007. We chose the spring of 2007 to ensure that the same exhibitions were shown as when the first survey was given. The main advantage of using the same exhibitions is that we can control for quality differences when we analyze changes in visitor composition. The Museum of World Culture had three out of the four start-up exhibitions on display at the time of the study. Since all exhibitions except one were the same during 2005-2007, we avoided both “the early bird visitors” and rapid changes in the number of visitors caused by openings of new exhibitions. If the exhibitions would not have changed during the fall of 2007, this point in time would have been a natural choice for a follow-up survey.

We handed out the survey to all visitors over age 19 who arrived through the main entrance. To make it easier for the respondents to have an opinion about the visit, we asked them to independently complete the questionnaire at the end of the visit and hand it back on their way out. A pilot study was conducted in November 2006, after which we made minor revisions of the questionnaire. The first survey was carried out over 5 days in the fall of 2006, while it took 11 days to administer the spring 2007 survey.⁹ A vast majority of the visitors answered and returned

⁹ The first survey was conducted on 2 weekend days and 3 weekdays and the follow-up survey on 7 weekend days and 4 weekdays. There are several reasons for the larger number of days for the follow-up study. One is of course that the number of visitors had decreased, not only due to the introduction of the entrance fee, but also possibly because of the straight out beautiful weather during some of the days we collected the survey at the museum.

the survey. In total 589 (fall 2006) and 315 (spring 2007) surveys were available for analysis. Both surveys had impressively high response rates: 86 percent in 2006 and 88 percent in 2007.

There are several ways to ask the WTP question. Two of the most common are to ask each respondent to state her/his maximum WTP (open-ended format) or to ask each respondent whether her/his WTP is at least as high as the bid suggested by a researcher (closed-ended format). The question used in our survey was open-ended. An important advantage of open-ended questions is that they result in much more information than closed-ended questions. There are, however, some arguments against using open-ended questions because the situation of paying for a public good often is uncommon for a respondent. The open-ended format also tends to lead to a large number of no and protest zero responses (Mitchell and Carson, 1989) and it is argued not to be incentive-compatible (Carson and Groves, 2007).

It has been argued that people are willing to pay more when the WTP question is hypothetical, i.e. when the respondents do not really have to pay anything for their visit. According to Balistreri et al. (2001), Loomis et al. (2001), and Brown et al. (2001), the CV method overestimates the actual WTP, leading to a hypothetical bias.¹⁰ On the other hand, Carson et al. (1996) show that CV estimates are slightly *smaller* than revealed preference estimates when it comes to quasi-public goods such as visits to national parks or recreational fishing tours. Moreover, Kriström (1993), Balistreri et al. (2001), and Brown et al. (2001) all show that open-ended hypothetical questions produce estimates closer to actual payments than closed-ended questions do. An additional way to decrease the existence of the possible hypothetical bias is to use a “cheap talk script” (Cummings and Taylor, 1999). In such a script, people are reminded that it is easy to be willing to pay for a good when they do not really have to pay anything. Respondents are then encouraged to act as if they really would have to pay the amount they state as their maximum WTP. In order to reduce a possible hypothetical bias, our questionnaire therefore included a cheap talk script before the WTP question (the WTP question, the follow-up question, and the cheap talk script are all presented in Appendix A).

¹⁰ The goods to be valued in the studies were an insurance policy (Balisteri et al., 2001), an art print (Loomis et al., 2001), and a public environmental good (removal of roads in Grand Canyon National Park).

4. Results

As explained, we have data from two different surveys, one carried out in the fall of 2006 before the introduction of the fee and one carried out in the spring of 2007 after the introduction of the fee. First we present the results from the 2006 survey and then from the 2007 survey. Finally, we show the results of the validity test of the CV method; i.e. whether the composition of the visitors with a WTP of at least 40 SEK (the fee implemented in 2007) in the fall sample significantly differs from that of the spring sample.

4.1 Results before the entrance fee was introduced

Descriptive statistics

Table 1 shows the distribution of the WTP answers and the corresponding visit rates. The respondents were asked to state their maximum WTP for entering the Museum of World Culture “today”, i.e. on the day they actually visited the museum. The admission would give free entrance to the museum for the following 12 months. Column 1 indicates the WTP (in SEK) for entering whereas the visit rate is shown in Column 3.

Table 1. Willingness to pay (WTP) and visit rates.

WTP	Number of obs.	Visit Rate (percent)
0	78	100.0
10	5	85.87
15	1	84.96
20	40	84.78
25	4	77.53
30	21	76.81
35	1	73.01
40	55	72.83
45	1	62.87
50	133	62.69
55	1	38.60
60	41	38.42
63	1	30.99
65	1	30.81
70	19	30.63
75	7	27.19
80	17	25.92
85	2	22.84
100	95	22.48
120	3	5.27
130	2	4.73
150	11	4.37
200	10	2.38
250	2	0.57
400	1	0.21

*WTP is in SEK. At the time of the survey, 6.98 SEK = 1 USD (2006-12-01).

The most common WTP response among visitors was 50 SEK (24 percent of the respondents). Seventeen percent had a WTP of 100 SEK whereas 14 percent answered 0 SEK. Hence, these three WTP levels constitute over 50 percent of all responses. The median WTP is 50 SEK, while the mean is 56.6 SEK.¹¹ Although the Museum of World Culture decided to introduce an

¹¹ There are no clear signs of a strong hypothetical bias since the mean and median WTPs are quite modest. This is in line with the mentioned results by Kriström (1993), Balistreri et al. (2001), and Brown et al. (2001), who all show

entrance fee of 40 SEK, a majority of the other public museums decided to charge between 50 and 80 SEK. Table 2 reports definitions and descriptive statistics of the variables we use in the analysis of the relationship between WTP and the composition of museum visitors.¹²

Table 2. Definitions and descriptive statistics of variables used in the analysis.

Variable	Explanation	Mean	Std. dev
Man	= 1 if respondent is a man	0.447	0.498
Age*	= age of respondent (years)	42.40	16.50
Young	= 1 if respondent is younger than 30 years	0.300	0.458
Immigrant	= 1 if respondent is a 1 st or 2 nd generation immigrant	0.199	0.400
Big city: suburb	= 1 if respondent lives in a suburb to one of the three biggest cities in Sweden	0.319	0.466
Other city/ countryside	= 1 if respondent lives in middle-sized city/small city/countryside/abroad	0.241	0.428
Education level	= respondent's educational level on a 1-4 scale, where 1 is elementary school and 4 is university education ≥ 3 years	3.246	0.979
Family income**	= Respondent household's monthly income after taxes (1,000 SEK)	25.18	14.24
Student	= 1 if respondent is a student	0.143	0.350
Pensioner	= 1 if respondent is a pensioner	0.132	0.339
Employed*	= 1 if respondent is employed	0.609	0.488
Cultural consumer*	= 1 if respondent consumes theatre/art/opera/dance/classical music ≥ 4 times/year	0.317	0.466
MWC-visitor	= 1 if respondent visited the Museum of World Culture (MWC) ≥ 4 times in the last 12 months	0.081	0.273
Very aware of debate	= 1 if respondent is very well aware of the debate about the free entrance reform	0.408	0.492
Very pleased with visit	= 1 if respondent is very pleased with the visit at the museum	0.423	0.494
Weekend visitor	= 1 if respondent visited the museum on a weekend	0.757	0.429
Spontaneous visit	= 1 if the decision to visit the museum was made on the same day as the visit	0.521	0.500
No. of respondents	568		

* Not included in the probit analysis in Table 4. ** At the time of the survey, 6.98 SEK = 1 USD (2006-12-01).

Table 2 shows that about 55 percent of the respondents were women. The mean age of all respondents was 42 years,¹³ and 30 percent were younger than 30. Twenty percent were first or second generation immigrants. Thirty-two percent lived in suburb areas close to one of the three biggest cities, 24 percent in middle sized cities, small cities, at the countryside, or abroad, while the remaining 44 percent lived in big city centers. About 14 percent were students, and 13

that open-ended formats of hypothetical questions produce estimates closer to actual payments than closed-ended questions do.

¹² To be able to investigate how the composition of the museum visitors differs at different entrance fees, we need to know each visitor's WTP for a visit. The respondents who did not answer the WTP question (29 individuals) are therefore excluded from the fall 2006 sample.

¹³ Respondents 19 years and younger had free access to the museum both before and after the museum introduced the entrance fee. We therefore exclude this age group from the study. This of course increases the mean age of the visitors participating in our study.

percent pensioners. Moreover, 32 percent were frequent consumers of culture, while only 8 percent were regular visitors at the Museum of World Culture. Interestingly, over 40 percent were very well aware of the debate about the free entrance reform. We also measured how pleased the respondents were about their visit to the museum. On a 1-5 scale where five means very pleased, 42 percent chose the highest alternative. Finally, 76 percent of the respondents visited the museum either on a Saturday or a Sunday, indicating that the museum has more visitors on the weekends than on weekdays.

By comparing the descriptive statistics of the respondents with the national statistics, we find that the share of the respondents who are women, share who are employed, and share with university education are significantly higher in this study than in Sweden as a whole (Statistics Sweden, 2007).¹⁴ However, the share of respondents who are women, share with university education, share who are employed, and share who live in a big city center, as well as the mean age of the respondents, are very close to the levels found in five previous surveys conducted by Exquiro Market Research (2006) on visitors at the Museum of World Culture. All comparisons are tested with the bootstrapping method.¹⁵ These statistics confirm the argument by O'Hagan (1995) and by the Department of Culture, Media and Sport in U.K. (1997) that a majority of museum visitors are from higher socio-economic groups.

Museum visitors at different levels of potential entrance fees

By looking at respondents' WTP for a visit, we will now investigate how visitor characteristics vary with different levels of a potential entrance fee. This is not only interesting because the museum was given the option to decide what fee to charge, but also because the mission to catch target groups remained despite the termination of the reform. Table 3 presents visitor characteristics at different possible entrance fees.

¹⁴ About 24 % of people aged 20-74 years have at least 3 years of university education and 47 % of people between 20 and 64 years are employed (Statistics Sweden, 2006).

¹⁵ The mean age of visitors at the Museum of World Culture is 41, 61 % are women, 60 % have a university degree, 55 % are employed, and 41 % lives in an inner city of Gothenburg (Exquiro Market Research, 2006). One thousand samples were bootstrapped by randomly drawing observations with replacement as many times as there are observations in the original sample. The differences between the means are calculated 1000 times for each variable. By using the percentile method and the 95 % confidence interval, it can be shown whether the means significantly differ from each other at the 5 % significance level. The advantage of the percentile method is that it makes no assumptions of the underlying distribution (Efron and Tibshirani, 1998).

Table 3. Visitor characteristics at different entrance fee levels, based on respondents' WTP.

Variable	Entrance Fee/WTP in SEK				
	0 free entrance	40	60	80	100
Man	0.447	0.419	0.375	0.425	0.449
Age	42.37	41.63	39.43	40.21	40.20
Young people	0.299	0.306	0.356	0.322	0.339
Immigrant	0.197	0.179	0.171	0.171	0.157
Big city: suburb	0.316	0.294	0.269	0.288	0.291
Big city: center	0.443	0.456	0.481	0.432	0.433
Other city/countryside	0.241	0.250	0.250	0.281	0.276
Elementary school	0.051	0.047	0.023	0.034	0.039
High school	0.226	0.225	0.250	0.260	0.268
University < 3 years	0.144	0.159	0.167	0.110	0.102
University ≥ 3 years	0.579	0.569	0.560	0.596	0.591
Family monthly income (in 1,000 SEK)	25.27	25.86	26.30	28.70	28.37
Student	0.141	0.145	0.144	0.103	0.094
Pensioner	0.132	0.115	0.079	0.068	0.071
Employed	0.608	0.627	0.676	0.726	0.748
Cultural consumer	0.312	0.333	0.347	0.329	0.331
Spontaneous visit	0.520	0.522	0.500	0.582	0.583
No. of respondents	589	408	216	146	127

NOTE: All categories of the Education variable are shown: Elementary school, High school, University < 3 years and University ≥ 3 years (compare with Table 2).

The second column (0) shows the case of no entrance fee, i.e. the full sample, and the third column (40) shows the respondents with a WTP of 40 SEK or more. By comparing these two columns, we can see how the composition of the visitors is predicted to change with an entrance fee increase from 0 SEK to 40 SEK. The remaining columns give the corresponding information at entrance fee levels of 60 SEK, 80 SEK, and 100 SEK, respectively. In order to investigate whether each of the discrete target group variables is equally distributed across groups we construct Chi² tests, while we do t-tests for the continuous variables (age and income).

Comparing with the full sample (free entrance), we observe some general trends as the fee increases. Setting the fee at 40 SEK rather than at 0 SEK should result in a significant decrease in the share of visitors who are men, share who are immigrants, and share who are pensioners. Increasing the fee to 60 SEK is predicted to reduce the share of visitors who are men and/or share who are pensioners, while the share of visitors who are young should increase. Finally, a fee of 80 or 100 SEK should reduce the share of visitors who are students and share who are

pensioners significantly, but increase the share who are employed. Overall we thus find that the shares of the visitors who belong to the target groups can be expected to decrease, although the changes should be small in magnitude, when the entrance fee increases. On the other hand, “cultural consumers,” i.e. those who regularly consume cultural activities other than museums, are not sensitive to the level of the entrance fee: There are no significant changes in their shares at any suggested fee level.

To be able to see whether the changes in visitor composition due to different fee levels (based on WTP) prevail when we control for a number of other variables we now turn to a regression analysis. We estimate five probit regressions and the results are shown in Table 4.¹⁶ The dependent variable is equal to one if a respondent would visit the museum at the given entrance fee level. The levels are 40, 60, 80, and 100 SEK respectively. In addition, it is of particular interest to investigate the group of visitors who are not willing to visit the museum at any entrance fee level. Therefore, the dependent variable in the first regression in Table 4 is equal to one if the visitor has a zero WTP.

¹⁶ The probit model allows us to investigate what affects the composition of the museum visitors at different WTP levels, including those with a zero WTP. Moreover, because the distance between the WTP categories are known, a probit model is more appropriate to use than an ordered probit model.

Table 4. Marginal effects for the five different probit regressions. The dependent variables are equal to one for different levels of WTP.

Variable	<i>WTP = 0</i>		<i>WTP ≥ 40</i>		<i>WTP ≥ 60</i>		<i>WTP ≥ 80</i>		<i>WTP ≥ 100</i>	
	Marg. Eff.	P-value	Marg. Eff.	P-value	Marg. Eff.	P-value	Marg. Eff.	P-value	Marg. Eff.	P-value
Man	0.064	0.025	-0.085	0.031	-0.103	0.015	-0.034	0.365	-0.000	0.999
Young people (<30 years)	-0.001	0.982	-0.013	0.804	0.095	0.096	0.079	0.122	0.097	0.045
Immigrant	0.014	0.688	-0.097	0.051	-0.081	0.122	-0.057	0.211	-0.075	0.082
Big city: suburb	0.082	0.022	-0.107	0.023	-0.109	0.026	-0.039	0.364	-0.035	0.386
Other city/countryside	0.021	0.588	-0.040	0.433	-0.052	0.325	0.012	0.794	-0.001	0.991
Education level	0.020	0.193	-0.021	0.326	-0.018	0.420	-0.020	0.324	-0.019	0.317
Family monthly income (in 1,000 SEK)	-0.001	0.499	0.003	0.027	0.004	0.019	0.005	0.001	0.004	0.003
Student	-0.036	0.450	0.029	0.648	-0.065	0.339	-0.104	0.070	-0.117	0.025
Pensioner	0.089	0.069	-0.059	0.353	-0.111	0.107	-0.099	0.101	-0.076	0.179
MWC visitor	0.045	0.407	-0.024	0.738	0.044	0.580	0.097	0.180	0.081	0.235
Very aware of the debate	0.046	0.131	-0.086	0.041	-0.110	0.013	-0.084	0.032	-0.093	0.012
Very pleased with visit	0.008	0.783	0.074	0.064	0.020	0.649	0.049	0.197	0.077	0.035
Weekend visitor	-0.039	0.252	0.081	0.082	0.087	0.078	0.047	0.278	0.055	0.175
Spontaneous visit	0.004	0.880	-0.000	1.000	-0.050	0.238	0.040	0.280	0.034	0.328
Pseudo R ²	0.054		0.042		0.052		0.058		0.066	
No. of respondents 568 (100%)	78 (14%)		402 (71%)		212 (37%)		143 (25%)		124 (22%)	

NOTE: The base category for the two variables “Big city: suburb” and “Other city/countryside” is “Big city: center” of the three biggest cities in Sweden. Furthermore, there is low correlation among the explanatory variables in the regression, indicating no problem with multicollinearity.

The results in Table 4 show that men, pensioners, and those living in the suburbs are significantly more likely to have a zero WTP for a visit. Hence, the museum might lose people from these visitor groups when it starts charging for entrance, regardless of the fee level. Since a majority of the visitors participating in this study live either in the city center of Gothenburg or in one of its suburbs, it is clear that the WTP differs depending on where in Gothenburg they live.¹⁷ Respondents who are very aware of the debate about the free entrance reform seem more likely to have a zero WTP for a visit.¹⁸

If we then look at the probit models for the various entrance fees, we find two main effects: the parameter estimate of income is positive and significant in all cases, and the coefficient of “Very aware of the debate” is also significant in all cases, but negative. Thus, those with a higher income are more likely to visit the museum at all fee levels, while those who are well aware of the debate about whether the free entrance reform should continue are less likely.

Comparing our results with the policy directives given to the Museum of World Culture, we find that men, immigrants, people who live in the suburbs, and those with lower income (four out of the six target groups) are less likely to visit the museum even at a very low fee level (40 SEK). The largest effect is whether a respondent lives in a suburb, which decreases the probability of visiting the museum by about 11 percentage points. On the other hand, we do not find any significant effect of age or education at that fee level. Thus, the museum is less likely to lose visitors from the remaining two target groups: people who are young and people with lower levels of education.

For the next fee level (60 SEK), the probability of visiting decreases if the respondent is a man or lives in a suburb, while the opposite is found for young people and weekend visitors. The fee level of 80 SEK seems to be too high for students and pensioners, while young people and those

¹⁷ About 40 out of the 44 percent of visitors who are included in the variable Big city: Center live in Gothenburg. Similarly, 30 of the 32 percent of visitors who are included in the variable Big city: Suburb live in Gothenburg.

¹⁸ The p-value is 0.131. However, this does not have to mean that they do not value the museum at all. One explanation might instead be that the zero WTP expresses their opinion against the government’s plan to stop the free entrance reform. We therefore also asked those with a zero WTP the reason for stating zero. About 11 percent answered that they think it is wrong to charge for access to the Museum of World Culture, while only about two percent said that the reason was either that the exhibitions at the museum were of bad quality or that they had already seen the exhibitions before.

who were very pleased with their visit¹⁹ would still be likely to visit even with a 100 SEK fee. Interestingly, people who are regular visitors of the Museum of World Culture, and have therefore seen the exhibitions several times, do not have significantly different WTPs than others.

4.2. What actually happened after the introduction of the entrance fee?

Table 5, Column 2 shows the results from the survey conducted during the spring of 2007 after the implementation of the entrance fee of 40 SEK at the museum. For comparison, Column 3 shows the results of the fall survey conducted before the fee was introduced.

Table 5. Mean values of the respondents visiting the museum after the introduction of the entrance fee of 40 SEK, mean values of all respondents visiting the museum during the free entrance reform, and mean values of respondents who stated a WTP of at least 40 SEK during the free entrance.

Variable	Spring 2007	Fall 2006	Fall 2006
	<i>After introduction of entrance fee</i>	<i>Before introduction of entrance fee</i>	<i>Sub sample of those who have maximum WTP \geq 40 SEK in CV</i>
Men	0.371	0.440	0.419
Age	40.22	42.37	41.63
Young people (< 30 years)	0.327	0.299	0.306
Immigrant	0.260	0.197	0.179
Big city: suburb	0.206	0.316	0.294
Big city: center	0.448	0.443	0.456
Other city/countryside	0.346	0.241	0.250
Elementary school	0.032	0.051	0.047
High school	0.165	0.226	0.225
University < 3 years	0.187	0.144	0.159
University \geq 3 years	0.616	0.579	0.569
Family monthly income (1,000 SEK)	27.55	25.27	25.86
Student	0.178	0.141	0.145
Pensioner	0.089	0.132	0.115
Employed	0.663	0.608	0.627
Cultural consumer	0.330	0.312	0.333
Spontaneous visit	0.454	0.520	0.522
No. of respondents	315	589	408

¹⁹ We also investigate what makes a visitor very pleased with her/his visit using a probit model (not reported here), where the dependent variable is one if the visitor was very satisfied. We find that those who visited the museum alone, those who came to learn about world culture or for a cultural experience were more likely to be very satisfied. On the other hand, men, people who visited the museum to see the building or had other less cultural reasons to visit the museum, and those who decided to visit the museum on the same day as the visit were less likely to be very satisfied. The last result is interesting because the spontaneous visits have been used as an argument for free entrance.

It can be concluded that the visitor composition changed after the museum started to charge an entrance fee. More specifically, we find a significant reduction in the share of visitors who are men, share who live in the suburbs, share with low education, share who are pensioners, and share who decided to visit the museum on the day of the visit. The results also show a significant increase in the share of visitors who are immigrants and/or employed, while the average age decreased.²⁰ Hence, we observe clear changes in the museum's target groups after the introduction of the entrance fee, while the share of the "cultural consumers" is the same. We can thus conclude that the Museum of World Culture has problems following the policy directives to reach some of the target groups after the introduction of an entrance fee, while those who are habitual consumers of different cultural activities seem to visit the museum regardless of the fee. It is, however, worth noting that the museum did not lose visitors from all target groups, e.g. immigrants. In addition to the loss in target groups, the total entrance fee revenues during 2007 were about 30 % below the government requirement that the museum was given after the entrance fee reform was abolished. Moreover, revenues from the museum shop decreased with the introduction of the entrance fee (National Museums of World Culture, 2008).

4.3 Validity of the CV results

In order to test the validity of the CV method, we compare the results from the spring sample, i.e. those who visited the museum after the introduction of the entrance fee (40 SEK), with the sub sample of fall visitors with a maximum WTP of at least 40 SEK. Hence, by comparing the mean values in Columns 2 and 4 in Table 5, we can test whether the CV correctly predicts the changes in visitor composition that are due to the change from no entrance fee to an entrance fee of 40 SEK.²¹ All the comparisons between the discrete variables are done using the Chi-Square tests, while we use t-tests for the continuous variables (age and income).

We find that the shares consisting of men, young people, students, pensioners, employed people, and cultural consumers do not significantly differ between the sub sample from the fall and the

²⁰ For the discrete variables, we construct Chi² tests for equal distribution across groups while we do t-test for the continuous variables (age and income).

²¹ Several previous studies have compared stated preferences with actual payments in an experimental design (e.g. Carson et al., 1996; Balistreri et al., 2001; Loomis et al., 2001; Brown et al., 2001). However, as far as we know, the present study is the first to use a natural experiment (i.e. an exogenous change) to validate the CV method.

spring sample after the introduction of the entrance fee. Similarly, the CV predictions of mean age²² and mean income do not significantly differ between the samples. However, contrary to the prediction of the CV method, the share of visitors who were immigrants was significantly larger after the introduction of the entrance fee. Investigating the first and second generation immigrants separately, we find that only the share of the visitors who were first generation immigrants increased, while the share of the visitors who were second generation immigrants decreased, which is in line with the prediction. The Chi-Square test for all three areas of residence simultaneously is significant, indicating that the areas of residence significantly differ between the two samples. That the share of visitors who live in the suburbs decreased even more than predicted is problematic for the museum, which has policy objectives to reach this group. On the other hand, it is positive for the museum that people living in small/middle sized towns or in the countryside visit the museum more than the CV method predicted. The results related to education show that there are no significant differences in the distribution of the education levels in total before and after the entrance fee was introduced. Separate tests for the different levels of education show, however, that the CV method underestimated the decrease in the share of visitors with only high school education. Finally, spontaneous visits decreased more than predicted as well.²³

Summarizing the comparison between predicted and actual shares, we find that the CV method successfully predicted changes in visitor composition for nearly all the target groups. However, the method overestimated the decline in one of the museum's main target groups (immigrants), while it underestimated the decline in another important target group (those who live in the suburbs).

²² The p-value for mean age is 0.116.

²³ According to the museum's visitor data, the museum lost 22 % of its visitors after the entrance fee was introduced, while we predicted a decrease by 28 %. However, these figures should be interpreted with care. The data from the museum counts all individuals who passed through the entrance door: those younger than 20, museum workers, people visiting only the restaurant, and people participating in a conference arranged in the museum's meeting hall. Thus, we are not able to compare the number of actual visitors before and after the entrance fee was introduced.

5. Conclusions

The issue of free entrance to museums is currently being debated in many countries. However, whether the composition of visitors changes as a result of free entrance is still an open question. In the present study we investigated changes in visitor composition associated with an introduction of an entrance fee to a state funded museum in Sweden. The motivation for the study was a recent policy change that brought an end to a reform of free entrance at 19 Swedish state funded museums. The museums were allowed to design their own entrance fees, while they at the same time had government directives to particularly catch visitors who rarely attend museums, i.e. men, young people, immigrants, people who live in the suburbs, people with low levels of education, and people with low income. We conducted two surveys in order to collect information about the visitors' socio-economic backgrounds, one before and one after the introduction of the entrance fee. While the entrance was still free, we asked visitors about their willingness to pay (WTP) for a visit, using the Contingent Valuation (CV) method. We then compared the results of the CV survey with the actual change in visitor composition caused by the fee. We thus had an opportunity to do a unique test of the validity of the CV, which, as far as we know, has never been done in a similar way before.

The results of the CV, based on a representative sample of museum visitors, indicate that men, immigrants, those who live in suburb areas, and visitors with low income should become less likely to visit the museum after an implementation of a 40 SEK . Hence, we did find a significant reduction in the shares of several target group visitors already at this low entrance fee. On the other hand, we also found that young visitors are not sensitive to the fee level and that education has no significant effect on a person's WTP for a visit. Our results are strengthened by our very high response rates (almost 90 %). The validity test of the CV method shows that a majority of the changes in visitor composition were correctly predicted. Since the museum had the same exhibitions before and after the introduction of the fee (thus no exhibitions were new), our findings are robust to quality differences. Hence, the CV method is rather successful in measuring what will actually happen after a change in entrance fee and can therefore be an interesting method to use for many museums. Our type of quasi-public good, a museum visit, seems very appropriate for the CV method in terms of the degree to which correct predictions are made. Applications to other cultural goods such as visits to theatres or dance performances

should therefore be of interest for future research. We are nevertheless careful in generalizing to what extent CV is successful in predicting changes in visitor composition for non-cultural goods.

The empirical results of the present study are important considering the government directives given to the museum that we study. The conclusion that targeted individuals are less likely to visit the museum already at a low entrance fee level emphasizes that these groups are price sensitive. Consequently, charging for entrance does affect who visits the museum. Moreover, the fact that an entrance fee is charged at all seems more central for the composition of visitors than the actual level of the fee. We conclude that although the composition of museum visitors were not evenly distributed across different socio-economics groups during the years of free entrance, the distribution became even more skewed after the introduction of the fee. Thus, abolishing the free entrance reform makes it even harder to follow the policy directive regarding target groups. This partly contradicts the findings by O'Hagan (1995), who claims that the entrance fee is not the reason why people from lower income groups attend museums less often. As free entrance and various policy reforms exist in several countries, the conclusions of the present paper are of interest in a broader context, especially for cultural policy makers in other countries. In line with our methodological contribution, we suggest that future research touch upon further evidence of stated preferences that are linked to an exogenous change.

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Appendix A

The willingness to pay question used in the questionnaire

Experience from previous studies shows that people claim to be willing to pay more when answering a hypothetical question in a questionnaire than what they actually would pay in real life. One possible reason for this might be that it is easy to be generous when the payment is not charged in reality. Another reason might be that people do not realize effect the payment would have on their household budgets.

Question 16. Assume that the Museum of World Culture would have charged you for your visit to the museum *today*. Once paid, the ticket would give you free entry to the museum for the next 12 months. All visitors older than 19 have to pay the same entrance fee. What is your *maximum* willingness to pay for entrance to the museum?

At most..... SEK

If you answered 0 SEK, please explain why you are not willing to pay for admission to the museum? (*Several alternatives are possible*)

- The exhibitions are not good enough
- I can not afford to pay
- I have seen the exhibitions before
- I believe it is wrong to charge for access to the Museum of World Culture
- Other: