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Valuing the Arts: A Contingent Valuation Approach

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Abstract

Government funding of the arts has received considerable attention in the United States in recent years. Efforts to cut funding to the National Endowment for the Arts and declining budgets for state arts agencies have raised questions about how much individuals value the arts. This paper applies the contingent valuation method to assess this value, using surveys of random households and of arts patrons. Our analysis estimated a mean willingness to pay (WTP) among all Kentucky households from \$6 to \$27, depending on the estimation technique used and on whether the scenario discussed is to increase arts performances by 25 per cent, or to avoid a 25 per cent or 50 per cent decrease in the number of performances. Among arts patron households, the mean WTP ranges from \$61 to \$132. Consumer demand for arts performances in large part follows a predictable pattern. The likelihood of respondents agreeing to make the donation that is requested rises as the size of the donation decreases. The likelihood is higher to avoid a 50 per cent decline in performances than to avoid a 25 per cent decline in performances. The mean WTP rises with income, and arts patron households have a much higher WTP than all households. WTP rises with on-site use factors such as frequency of attendance. The WTP also rises for arts patrons households with off-site use such as watching arts events on television or reading about the arts in newspapers and magazines.

Keywords: contingent valuation, funding for the arts, willingness-to-pay

1. Introduction

Through their ticket purchases, and time and monetary donations, residents of the United States demonstrate the value they place on cultural activities. The valuation is evident in the support received by major cultural institutions such as theatres, philharmonics, and museums in urban areas as well as smaller, voluntary organizations located in communities of all sizes. Support from individuals is often augmented by support from governments at the federal, state, and local levels. The net result is that scores of professional orchestras, theatres, and other artistic groups are scattered throughout the United States, along with thousands of voluntary performing organizations.¹

The value that individuals place on the arts has received increased attention in the past few years. Federal funding of the arts has received much scrutiny from

lawmakers and citizens, and state funding for the arts has also decreased over time. Increasingly, local and regional organizations and governments are being asked to provide a greater share of funding to help support arts organizations. Indeed, an analysis of the members of the U.S. Urban Arts Association, which includes local arts agencies in the 50 largest U.S. cities, found that state appropriations to these organization had decreased by 9.1 per cent from 1990 to 1995 while National Endowment for the Arts appropriations to these members had decreased by 5.2 per cent. On the other hand, local public funding of arts agencies in these communities increased by 182 per cent over the same period.² Moreover, there is some evidence that donations to arts organizations from individuals may be declining. A 1994 report entitled *Giving and Volunteering* indicated that the average household donating to the arts gave 47 per cent less in 1993 than in 1987, from \$260 to \$139 per year.³

To assess the value that the residents of a state place on arts performances and exhibits, this paper uses the contingent valuation method, which uses survey questionnaires to ask households to reveal the value they place on public goods. This valuation, and the related willingness to make donations to arts organizations directly or through their government, can arise because the public perceives a use value, option value, and/or existence value from the arts (Throsby and Withers, 1979; Clark and Kahn, 1988). Individuals may value the existence of arts events because they attend the events, they wish to maintain the option to attend events, or they simply perceive cultural or other benefits from the existence of the arts, even if they do not attend.

Contingent valuation has been used extensively to estimate the value of public goods, particularly environmental and health goods (e.g., Mitchell and Carson, 1989; Kenkel et al., 1994; O'Connor and Blomquist, 1997; Ready et al., 1997; Blumenschein et al., 1998; Whitehead and Hoban, 1999; Cummings and Taylor, 1999; Ethier et al., 2000; Gregory, 2000; Carlson and Martinsson, 2001; Blumenschein et al., 2001). This paper uses the contingent valuation method to measure the value that individuals place on cultural amenities.⁴ In addition, this study examines the value that the public places on the *composite* arts good rather than particular arts institutions. Thus, this study is relevant for considering the value the public places on changes in across-the-board funding for arts agencies, rather than specific organizations. Previous contingent valuation studies of the arts have considered funding for specific institutions. Santagata and Signorello (2000) examined the value that residents of Naples, Italy placed on the city's public cultural program to open for visitation a local network of churches, palaces, and a museum. This value was measured by public willingness-to-pay out-of-pocket to support the program. Hansen (1997) examined the value that Danish households placed on the Royal Danish Theatre, also measured by public willingness-to-pay out-of pocket to support the theatre. Martin (1994) examined the value that the public in Quebec placed on supporting museums in that province, as measured by public willingness to divert more tax dollars to museum subsidies and away from other purposes. Each study suggests that contingent valuation studies can be used to estimate willingness-to-pay to support cultural institutions.

This study also surveys both arts patron households and all households regarding their willingness-to-pay (WTP) to support an increase in the number of arts performances and exhibits or to avoid a decrease in the number of performances and exhibits. This study also uses both parametric and nonparametric techniques to evaluate the mean WTP of households to support arts performances.

The paper is organized as follows. The next section considers the motivations behind arts donations, discusses the contingent valuation method, and reviews three previous contingent valuation studies of cultural amenities. The third section discusses the design of the survey questionnaire and the response rate and profile of respondents. The fourth section contains a nonparametric and parametric analysis of survey results and discusses the impact of household characteristics on willingness-to-pay to support the arts. The fifth section concludes the paper.

2. Public Support for the Arts

The revenue of arts organizations often comes from a combination of commercial ticket sales, concessions, and advertising as well as corporate, individual, and government donations. While arts organizations can exist primarily on commercial sales, as in the case of many Broadway theater productions, much revenue typically comes from donations. In fact, a recent survey of arts organizations in Kentucky found that corporate and individual donations and public support accounted for 40 per cent of organization revenues (Thompson et al., 1998). This revenue pattern indicates that consumer support for arts organizations frequently occurs through donations, in addition to ticket sales.

As with environmental amenities, individuals may be motivated to make donations to the arts due to use value, option values, and/or existence value. Use value is the value placed on the presence of arts activities by individuals who attend arts performances (on-site use) or enjoy them indirectly, perhaps by reading reviews of the performances or viewing broadcasts on television (off-site use). Most of these individuals naturally share some of the use value they derive from arts performances with arts organizations through ticket purchases. They may want to share even more of their use value with arts organizations through donations, however, which ensures access to the arts amenity they consume (Clark and Kahn, 1988). In particular, donations may be necessary to encourage local arts organizations to offer more high-quality performances or exhibits, or, in the case of smaller cities and communities, to help organizations to exist. The alternatives, after all, might be that these people attend fewer (or no) arts events or that they bear the costs of repeatedly traveling to other places to see a full season of theatre or ballet or to visit an art museum. In other words, these individuals may donate some of their consumer surplus at prevailing ticket prices in order to keep the remaining surplus or to avoid these travel costs.

Relative to indirect market methods for estimating the value of public goods (i.e., through hedonic housing or wage equations), one advantage of the contin-

gent valuation method is that the researcher can vary the amount of change in the public good rather than working with whatever changes are observed in the data. In addition, the level of change in the composite good can be directly described with a contingent valuation approach but may be very difficult to measure in data collected at the state or city level. Finally, Mitchell and Carson (1989) and Blumenschein et al. (1998) point out that the accuracy of contingent valuation estimates has been supported by some experiments comparing willingness-to-pay measured both with hypothetical contingent valuation surveys and with real payments, at least when respondents are very familiar with the goods involved, and respondents are highly certain about their responses.

Among previous contingent valuation studies of the arts, Hansen (1997) found that the aggregate willingness-to-pay among Danish citizens to support the Royal Danish Theatre exceeded the public subsidy for the theatre. Hansen also found positive willingness-to-pay among citizens who had never attended the theatre, suggesting that Danish citizens have an option and/or existence value for the Royal Danish Theatre. Martin (1994) found that the social value of the museum he studied in Quebec exceeded its public subsidy. Santagata and Signorello (2000) found that aggregate willingness-to-pay among residents of Naples, Italy, to support a local public cultural network of churches, palaces, and a museum exceeded the public subsidy for the network. Clark and Kahn (1988) used a hedonic wage approach using individual data from 279 metropolitan areas to estimate willingness-to-pay for five cultural amenities: museums, zoos, symphonies, dance troupes, and theatres. Empirical estimates revealed a positive WTP to support an increase in the quality of these cultural institutions, or an increase in their quantity in any particular city. The average household's WTP to support one additional museum, zoo, symphony, dance troupe, or theatre ranged from \$1 for an additional theatre to \$37 for an additional symphony and \$68 for an additional zoo.

3. Survey Design, Response Rates, and Respondent Characteristics

3.1. *Survey Design and Response Rates*

Data for this contingent valuation study come from two mail surveys. One survey was a random sample of all households in Kentucky and the other survey sampled households that were considered "arts patrons."⁵ The survey was sent to 600 randomly selected Kentucky households and 600 randomly selected arts patron households. Incorrect or undeliverable addresses accounted for 37 surveys in the all household sample and 7 surveys in the arts patron sample, leaving 563 potential survey recipients among the all household sample and 593 potential survey recipients among the arts patron sample. A second copy of the survey was sent to nonrespondents to the first mailing and a third copy was sent to nonrespondents to the second mailing. Of the potential recipients, 168 surveys were returned from the all household sample with completed contingent valuation questions, for a return rate of 29.8 per cent; 335 surveys were returned from the arts

patron sample that had answered the contingent valuation questions, for a return rate of 56.5 per cent.⁶

We first asked respondents about their “consumption” of arts events and arts activities. These included questions on attendance at arts performances or exhibits; monetary, time, or in-kind donations to arts organizations; production or performance in arts events; and reading or viewing of arts activities or performances in newspapers or on radio or television. These questions were designed to remind respondents about their “off-site” or “on-site” consumption of arts performances and exhibits and added context to the respondents’ valuation of the arts later in the survey. The questions also classified each respondent as a user or non-user of the arts, which is used in the analysis of the survey results below.

Each questionnaire also contained one of three contingent valuation scenarios, and each respondent was randomly assigned one of the three scenarios. All three scenarios explained that hundreds of arts performances occur throughout Kentucky each year and that these performances are funded in part by state and local government tax dollars and private donations. The three scenarios then diverged. The first scenario explained that a group was being formed to raise money from private donations to establish a fund to support arts organizations. The fund’s goal would be to raise the number of arts performances and exhibits by 25 per cent over current levels. The second scenario indicated that a cut in state and local government funding would reduce budgets for arts organizations so that a 25 per cent reduction in arts performances and exhibits would result. Respondents were asked to donate money in order to avoid this 25 per cent reduction. Similarly, a third scenario indicated that a cut in government spending would lead to a 50 per cent reduction, and respondents were invited to donate money to avoid this 50 per cent reduction. With these alternative scenarios, we could examine the value that respondents placed on maintaining existing performances and exhibits in contrast to funding new or additional performances and exhibits. (See Appendix I for the text of each scenario. A copy of the complete survey instrument is available upon request).

For each scenario, respondents were asked whether they would be willing to pay \$10, \$25, \$50, \$75, \$150, \$500, or \$2,000 each year to fund the given scenario. Each respondent was randomly assigned only one amount.⁷ Thus, the donation amount served as the price of the scenario, and respondents were asked whether or not they would be willing to pay the stated amount for the given scenario. The respondents were also asked to indicate the certainty of their donation, on a scale of 1 to 10, with 10 being certain. This information made it possible to distinguish between respondents who would *probably* pay from those who would *definitely* pay.

Respondents who indicated a certainty of 9 or 10 were considered to be willing to pay the given amount, but respondents who indicated a certainty of less than 9 were not considered “willing to pay,” even if they responded that they would pay the specified amount. Such a high level of certainty was required due to the hypothetical nature of the willingness-to-pay question. Some have ar-

Table I. Comparison of sample characteristics across surveys

	Kentucky population (1990 census)	Kentucky current population survey (March 1997)	Kentucky Poll, fall 1997, all respondents	Kentucky Poll, fall 1997, arts attendees	U.K. arts study, fall 1997, patrons	U.K. arts study, fall 1997, resident attendees	U.K. arts study, fall 1997, all residents
Average household size	2.60	2.92	3.04	3.56	2.43	2.51	2.52
Number of children under 18	0.63	0.68	1.27	1.77	0.51	0.70	0.68
Median household income (1996 \$)	\$27,709	\$39,688	\$44,316	\$44,316	\$62,500	\$47,500	\$45,000
Percent male (18 and over population)	47.40%	47.24%	49.29%	52.53%	29.64%	46.25%	54.55%
Median age (18 and over population)	39.0	42.0	45.0	43.0	51.0	46.5	48.0
Education							
8th grade or less		11.04%	5.98%	0.00%	0.00%	0.00%	3.07%
More than 8th grade but no HS diploma	34.4%	13.63%	9.92%	4.38%	0.00%	3.75%	7.36%
High school diploma	51.0%	36.49%	32.91%	22.23%	3.59%	21.25%	26.38%
Some college, but no degree	N/A	13.19%	28.35%	35.35%	13.47%	22.50%	26.99%
Associate degree	N/A	5.30%	N/A	N/A	6.59%	8.75%	8.59%
Bachelor's degree		10.23%	14.01%	22.22%	33.53%	26.25%	17.18%
Master's, professional, or doctorate degree	13.6%	5.44%	8.82%	15.82%	42.81%	17.50%	10.43%
Percent who have attended an arts event in past 12 months	N/A	N/A	46.7%	100%	92.0%	100%	48.0%
N	3,685,296	1,210	635	297	339	82	171

For the Kentucky Poll numbers, the high school diploma category for education includes those with a GED degree. For the “some college” category, the figure includes those who responded 1–2 years of college, graduated junior college, vocational degree, or 3–4 years of college. For the bachelor’s degree category, this figure includes those who responded they had attended “some graduate school” but had not received a graduate degree.

gued that contingent valuation respondents are too willing to agree to hypothetical payments since they are not required to make actual payments, leading to an upward bias in willingness-to-pay estimates (Mitchell and Carson, 1989). Requiring a high level of certainty helps to address this concern by permitting affirmative responses only for those who are most certain in their responses. For example, Blumenschein et al. (1998), Johannesson et al. (1999), and Blumenschein et al. (2001) find that respondents who were “definitely sure” of their affirmative response were equally likely to agree to make a payment as respondents faced with a real purchase decision.⁸ Allowing fewer affirmative responses also would lead to a lower total willingness-to-pay.⁹

This “take-it or leave-it” bidding approach has two advantages. First, it is similar to the type of buying decisions consumers make every day—an item is available at a given price and consumers decide whether or not to purchase it. Second, it creates a demand curve for the arts amenity (whether the amenity is a 25 per cent increase in performances, or avoiding a 25 per cent or 50 per cent decrease). The percentage of affirmative responses can be calculated at each price level to generate a survivor curve (see Figure 1). The area under this survivor curve is what the mean voter would be willing to pay for the amenity. The price alternatives used here were developed from an open-ended willingness-to-pay question given to a pre-test group.¹⁰ For a full discussion of alternative contingent valuation bidding procedures, see Mitchell and Carson (1989).

3.2. Respondent Characteristics

Table I contains a description of the socio-demographic characteristics of the respondents from both samples. For comparison purposes, the same characteristics are presented for all Kentucky households according to the 1990 Census, the March 1997 Current Population Survey (CPS), and the Fall 1997 Kentucky Poll, which is conducted semi-annually by the University of Kentucky Survey Research Center.¹¹ Data in Table I indicate that respondents to the all household survey were older and had higher incomes than respondents to the 1997 CPS for Kentucky. The median age among respondents to the U.K. Arts Survey of all Kentucky households was six years older than in the CPS, while median household income was roughly \$5,000 higher. Consistent with their higher average incomes, respondents to the all household sample of the U.K. Arts Survey were also more likely to have a bachelor’s or master’s degree and less likely to be a high school dropout or to have only a high school diploma. This suggests that there was some response bias in the U.K. Arts Survey of all Kentucky households, and responses will be somewhat biased to the characteristics and preferences of older and wealthier households. It is expected that individuals more interested in the arts would be more likely to take the time to complete the survey, and wealthier households are more likely to attend arts events. In addition, older individuals may have a lower opportunity cost to completing the survey, which would lead to higher return rates among older households. Finally, it should be noted that higher levels of education and median household in-

come among arts patrons cannot be assumed to be a sign of response bias, since higher education, income, and age are all characteristic of arts patrons (Throsby and Withers, 1979).

Both the all household sample of the U.K. Arts Survey and the Kentucky Poll found that a similar percentage of households had attended arts events during the last year, 48 per cent versus 47 per cent. Both surveys also found similar median incomes and education levels, with slightly higher values in the U.K. Arts Survey. This result indicates that response bias in the U.K. Arts Survey was no worse than one would encounter in a statewide telephone survey such as the Kentucky Poll.

Survey responses reported in Table I indicate some of the socio-economic characteristics of three groups of respondents to the survey: (1) respondents to the all household survey who had not recently attended an arts event, (2) respondents to the all household survey who had attended an arts event, and (3) respondents to the patron survey. These three groups clearly differed in terms of income and education levels, which would influence the level of support that these groups provide to arts organizations. Furthermore, the three groups show differing levels of interest in the arts, which will also affect the use value each group receives from the arts amenity. One indicator of support for the arts is the donations that each group had made to arts events over the previous 12 months.

Data on donations to the arts gathered in the survey of all Kentucky households suggests that households that attend arts events make greater donations in support of the arts. On average, all households made monetary donations of \$37 annually to arts organizations in the preceding 12 months. Among households that had attended an arts event in the last 12 months, the average annual monetary donation was \$72. For households that had not attended an event in the last 12 months, the average annual donation was \$2. In contrast, patron households on average donated \$230 in money each year to arts organizations.

4. Contingent Valuation Results

This section presents the results of an analysis of survey data using both non-parametric and parametric techniques. First, a nonparametric technique is used to analyze respondent WTP for changes in the level of arts performances. Next, a logit model is utilized to examine how the probability of agreeing to a requested donation varies over factors such as price, income, and consumer intensity of use (of the arts). Coefficients from the logit regression then can be used to estimate how WTP varies with change in the number of arts performances, price, income, and intensity of use.

Our analysis estimated a mean WTP among all Kentucky households from \$6 to \$27, depending on the estimation technique used and on whether the scenario discussed is to increase arts performances by 25 per cent, or to avoid a 25 per cent or 50 per cent decrease in the number of performances. Among arts pa-

tron house holds, the mean WTP ranges from \$61 to \$132. In addition, consumer demand for arts performances in large part follows a predictable pattern. The likelihood of respondents agreeing to make the donation that is requested rises as the size of the donation decreases. The likelihood of agreeing rises with the scale of the scenario, that is, the likelihood is higher to avoid a 50 per cent decline in performances than to avoid a 25 per cent decline in performances. The mean WTP rises with income, and arts patron households have a much higher WTP than all households. WTP rises with on-site use factors such as frequency of attendance. The WTP also rises for arts patrons households with off-site use such as watching arts events on television or reading about the arts in newspapers and magazines.

In the analysis that follows it should be noted that responses from a number of households in both survey samples were excluded because respondents were identified as "protestors." This term refers to respondents who appeared to reject the contingent valuation exercise. As a result, their responses were not a reflection of their WTP to support arts performances and exhibits.¹²

Respondents who said they would not give any donation—regardless of the amount—because they do not value the arts were not considered protestors. The same was true of respondents who indicated they did not want to contribute because they did not attend arts activities or because they considered arts an entertainment but not a necessity. In addition, people who said they could not afford to donate the specified amount were not considered to be protestors. All of these answers simply indicated that respondents had a low valuation of arts performances. Altogether, protestors accounted for 26 per cent (43 of 168) of usable all household surveys and 16 per cent (54 of 335) of usable arts patron households. This percentage of protestors was similar to that found in another contingent valuation survey of Kentucky households (Ready et al., 1997).

4.1. Results of Nonparametric Analysis

Data from contingent valuation surveys represent respondent evaluations of a hypothetical market rather than observations of actual economic transactions. This creates a concern when using contingent valuation data as to whether the data on which results are based follow the basic premises of consumer theory, such as falling demand with price. One advantage of a nonparametric analysis of contingent valuation data is that the response to price can be directly observed in the data. This creates an additional reason to conduct a nonparametric analysis beyond the usual motivation to avoid restrictions due to functional form.

The nonparametric technique for analyzing respondent WTP is to develop survivor curves showing the likelihood of agreeing to make the requested (hypothetical) donation as a function of the bid asked, that is, as a function of how much the respondent is asked to contribute. Thus, for each bid that was asked, whether \$10, \$25, \$50, \$75, \$150, \$500, or \$2,000, we can calculate the percentage of respondents who were willing to pay the requested bid. These survivor curves

are important for at least two reasons. First, we can examine whether respondent bids are following the expectation of consumer behavior that the likelihood that a particular person would agree to make the requested bid falls as the bid price rises. Second, it is possible to estimate mean WTP by examining the area under the survivor curve.

Figure 1 illustrates the survivor curves for each of the six scenarios examined in this research. Survivor curves are pictured for both all households and arts patrons households for all three scenarios: fund a 25 per cent increase in arts performances, avoid a 25 per cent decrease in arts performances, and avoid a 50 per cent decrease in arts performances. Note that the survivor curves illustrate the expected pattern that the likelihood of an affirmative response falls as the bid rises. In some survivor curves, however, portions of the curve are smoothed, meaning that the likelihood of an affirmative response was averaged over several bid levels in order to preserve the downward (or at least horizontal) sloped shape of the curve (Johannesson, 1996). In these curves, the actual, non-smoothed likelihood is also presented for each bid using points off the curve. Note also that in all cases the seven prices that were used were sufficient to bound the maximum WTP among sampled respondents. In other words, no respondent was willing to pay the maximum "bid" of \$2,000 annually. This result allowed our bounding the survivor curve on the x -axis and facilitated calculation of the mean WTP, or the area under the survivor curve.

For the survivor curves from the all household survey, it was possible to determine the x -axis intercept by selecting the midpoint between the last bid where a respondent gave an affirmative response (\$50 or \$75) and the next highest bid amount. Similarly, for arts patron households, the midpoint between the \$500 and \$2,000 bids was used, or \$1,250. Choosing such a uniform x -intercept insured that the measured mean WTP between the three scenarios was not affected by the choice of a different x -axis intercept for each art patron household survivor curve. The y -axis intercepts were determined by continuing the slope of the survivor curves between the \$25 and \$10 bids back until reaching the y -axis. This approach resulted in y -axis intercept values lower than 1, reflecting the fact that some households would have a WTP of \$0.

For all Kentucky households, in the top row of Figure 1, a relatively high percentage of respondents was willing to give \$10 annually, but the likelihood of an affirmative response fell thereafter. No respondent was willing to pay more than \$75 annually in any of the three scenarios. The likelihood of an affirmative response fell consistently with price in the 25 per cent increase and 25 per cent decrease scenarios, although more smoothing was required in the 50 per cent reduction scenario.¹³

For arts patron households, affirmative responses are much more likely among patron households over the \$10 to \$500 price range. This result is not surprising since these households are much more likely to attend arts events than the average Kentucky household. In addition, arts patron households on average have higher incomes and higher education levels. Furthermore, the percentage of affirmative responses from arts patrons households falls very consis-

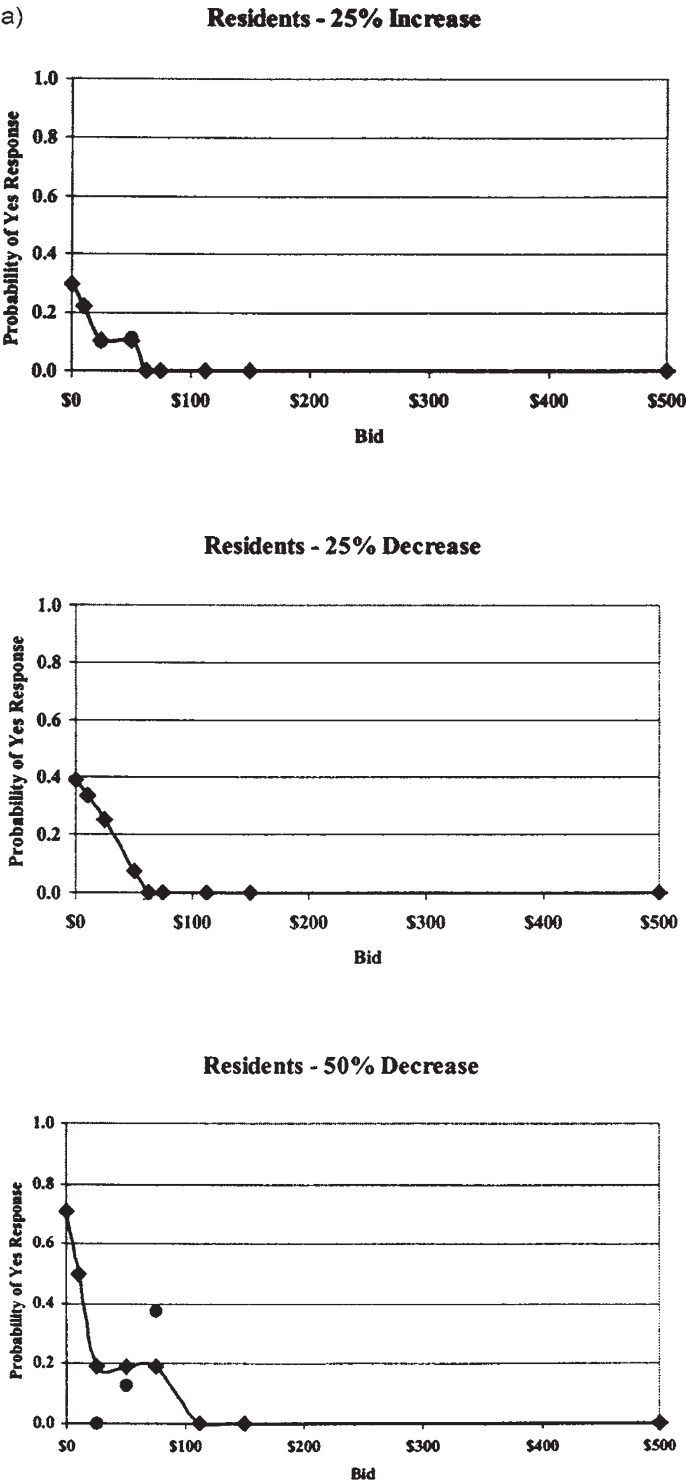


Figure 1a. Survivor curves – All households.

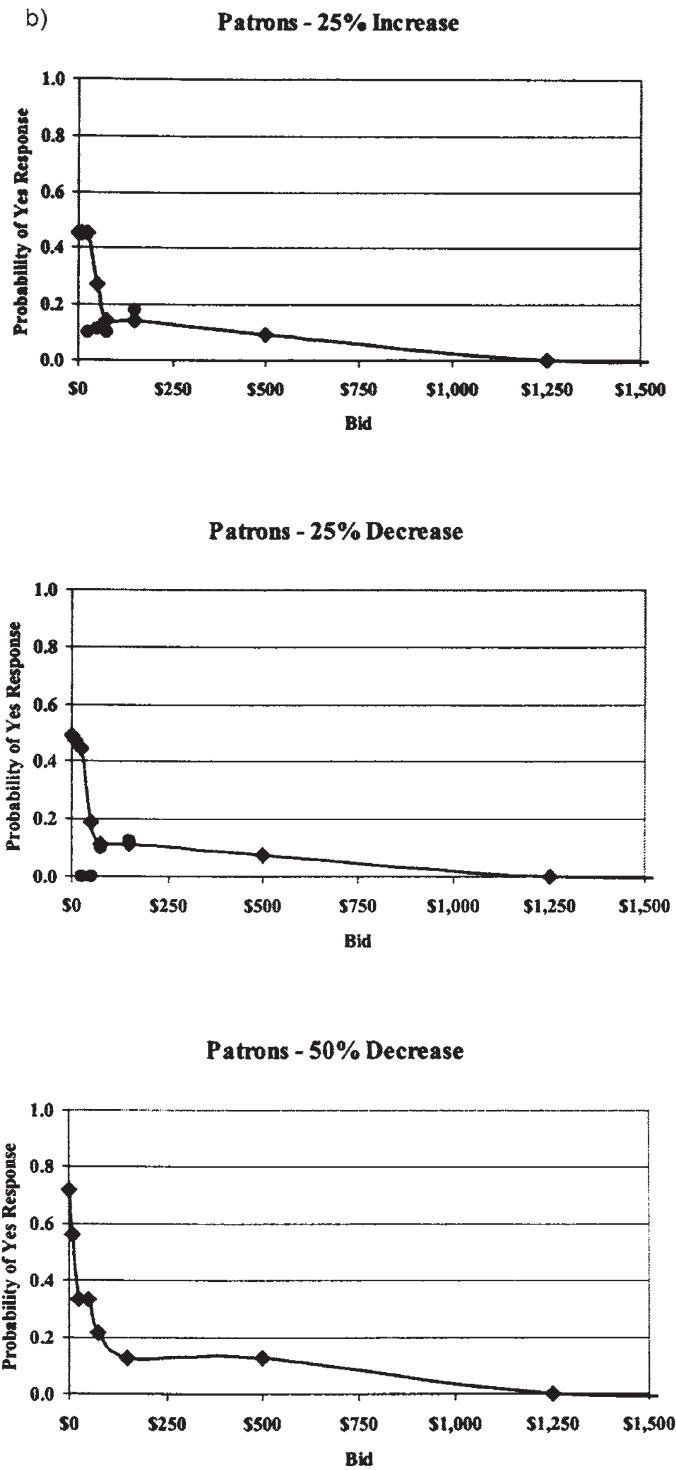


Figure 1b. Survivor curves – Arts patrons.

Table II. Mean willingness-to-pay (WTP) as measured by the non-parametric method

Survey group/scenario		Mean WTP
All households		
25% increase in performances	(N = 47)	\$8.36
25% decline in performances	(N = 40)	\$12.55
50% decline in performances	(N = 38)	\$24.31
Arts patron households		
25% increase in performances	(N = 95)	\$111.65
25% decline in performances	(N = 98)	\$93.45
50% decline in performances	(N = 88)	\$131.63

tently with the increase in donation requested in all three scenarios. This result is consistent with respondents' making rational valuations when responding to the survey.

The mean WTP for each scenario is the area under each survivor curve pictured in Figure 1. In Table II, mean WTP is presented for each of the three scenarios for both survey samples. As would be expected, the mean WTP of arts patron households was substantially higher than that of all households, roughly 5 to 13 times greater than that of all households depending on the specific scenario. Note also that both all households and arts patron households exhibited a higher WTP to avoid the 50 per cent decline than the 25 per cent decline, a result that would be expected for a scenario with more substantial decreases in performances.

4.2. Results of Parametric Analysis

Parametric analysis of survey results presents an opportunity to analyze how WTP is affected by the characteristics of Kentucky households. Two broad groups of characteristics are of interest. The first group includes the basic demographic factors such as household income and education of the survey respondent. It is anticipated that interest in the number of arts performances available would rise for higher income and more educated households. The second group of characteristics is the household's actual intensity of use of arts performances and exhibits. This refers to measures of "on-site" use such as whether members of the household attend arts events and how frequently they attend. It also refers to "off-site" uses such as whether household members still "consume" arts performances and exhibits even when they do not attend, through activities such as reading about the events in newspapers and magazines or enjoying arts events on television or radio. WTP to support an increase in the number of performances and exhibits, or prevent a decrease, is expected to rise with the inten-

sity of household use. This leads to the following initial regression framework for WTP:

$$\text{WTP} = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4, \quad (1)$$

where X_1 is household income, X_2 is variable for education, X_3 is a variable for household attendance of arts performances or exhibits, and X_4 is a variable for off-site use of the arts through newspapers, magazines, radio, or television. The linear form in Equation (1) is useful when calculating mean values for WTP, as is explained below.

Results of the regression of an equation similar to Equation (1) can be used to calculate mean WTP under each of the three scenarios for both all households and arts patron households. For this calculation, we assume that respondent willingness-to-pay follows a logistic distribution. Under a logistic distribution and given the particular bid requested for each respondent, the probability of an affirmative answer can be expressed as:

$$\Pr(\text{WTP} > \text{Bid}) = 1/(1 + e^{-X}). \quad (2)$$

The X refers to the right-hand side of Equation (1) above plus an additional variable for the bid requested of a particular survey respondent. As would be expected, and as was illustrated in the nonparametric analysis above, the probability of acceptance can be strongly influenced by the magnitude of the bid requested. This explains why the amount of the bid was added to the household characteristics in Equation (1) to define X in the logistic regression:

$$\Pr(\text{WTP} > \text{Bid}) = 1/(1 + e^{-(b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5)}). \quad (3)$$

The variable X_5 refers to the size of the bid, whether \$10, \$25, \$50, \$75, \$150, \$500, or \$2,000.

We assume that the minimum WTP among respondents is \$0. While some households will have zero values for use value, option value, and existence value in arts performances, it is less clear that any households would assign a negative value to arts performances. Given a \$0 minimum bid, the formula for mean WTP (Johannesson, 1996) is

$$\text{Mean}(\text{WTP}) = -(1/b_5) * \ln(1 + e^{(b_0 + b_1\bar{X}_1 + b_2\bar{X}_2 + b_3\bar{X}_3 + b_4\bar{X}_4)}). \quad (4)$$

The bars over the variables indicate that the mean values are used.

To estimate the coefficient values necessary to calculate mean WTP, we estimated an equation similar to Equation (1). As explained above, an additional variable for the magnitude of the bid requested also was added (X_5). Furthermore, survey responses for all households and for arts patron households were pooled across all three scenarios to increase sample size. This pooling made it necessary to add dummy variables for the 25 per cent increase in performances and exhibits scenario (X_6) and the 50 per cent decrease scenario (X_7), with the 25 per cent decrease scenario as the omitted category.

The income variable (X_1) contained the cell mean of the income category that the respondent selected from the survey form. The education variable (X_2) indicated years of schooling.¹⁴ The attendance variable (X_3) indicated the number of arts performances or exhibits that members of the household had attended in the last 12 months. The level of attendance was found to be superior to a dummy variable indicating whether or not a household member had attended an event in the last 12 months. The off-site use variable (X_4) was the average hours spent per week reading, viewing, or listening about the arts.

The logistic parameter estimates are reported in Table III with standard errors in parentheses. The parameter estimates in Table III provide an estimate of the effect of the X variables on the relative probability of answering yes on the contingent valuation question (Maddala, 1983, p. 29):

$$\partial \ln(\text{Pr(Yes)} / \text{Pr(No)}) / \partial X_i = b_i. \quad (5)$$

For example, attendance at another arts performance in the all household sample (first column of Table III) is associated with an increase in the natural log of the probability of answering yes to the contingent valuation question of 0.130 (b_3), or approximately a 13 per cent increase in the relative probability of making the requested bid, holding the level of the bid and other variables constant.

It should be noted that the sample size reported for each regression is lower than the total number of returned surveys, due partly to the elimination of "protestor" surveys. Where possible, dummy variables were employed in order to use observations with missing variables but this was not possible when the dummy variables were perfectly correlated with the dependent variable.¹⁵

The negative and statistically significant values for the coefficient on the bid variable (b_5) indicate the expected result that the probability of agreeing to make the requested bid will fall as the bid rises. Note that the magnitude of the coefficient on the bid variable is much larger for all households than for arts patron households. As might be expected, this suggests that the typical Kentucky household is much more sensitive than the typical arts patron household to the "price" they are asked to pay to expand the number of arts performances and exhibits, or to maintain the existing number of performances and exhibits. For example, if a Kentucky household were asked to make a \$30 bid rather than a \$25 bid, the probability of a yes response would fall by 2.7 per cent but would fall by just 0.8 per cent for an arts patron household.

For arts patron households, household income was a significant variable in predicting the probability of agreeing to make the requested bid.¹⁶ This suggests that rising income would have a substantial impact on WTP. For instance, the elasticity of the change in mean WTP in response to a change in mean income was 0.49 for arts patron households. This positive elasticity value indicates that mean WTP to fund an increase in performances, or to avoid a decline in performances, should rise steadily as mean income increases. While this elasticity is less than unity, the estimate was likely depressed given that the income variable was

Table III. Logistic parameter estimates for factors affecting willingness-to-pay ^a

Variable	All households	Arts patron households
Intercept (b_0)	-4.246 (2.696)	-2.187** (0.960)
Income (b_1) ($\times 10,000$)	0.0304 (0.102)	0.104*** (0.0319)
Education (b_2)	0.227 (0.198)	-0.00304 (0.147)
Number of performances attended (b_3)	0.130** (0.065)	0.0577*** (0.0165)
Off-site use (TV, radio, magazine) (b_4)	-0.0295 (0.0373)	0.0373** (0.0163)
Bid (b_5)	-0.0369** (0.0152)	-0.00724*** (0.00204)
25% increase scenario dummy (b_6)	-1.052 (1.013)	0.0437 (0.380)
50% decrease scenario dummy (b_7)	1.052 (0.865)	0.0995 (0.388)
N	111	276
Log-likelihood	-0.266	-0.455
McFadden R^2	0.328	0.207

^a Standard errors in parentheses. Not shown are coefficients for dummy variables with a value of one when the income, attend, or off-site use variable was missing. This allowed observations with missing values for these variables to be included in the regression.

*** Indicates significant at the 1% level.

** Indicates significant at the 5% level.

* Indicates significant at the 10% level.

based on cell means rather than being a continuous variable. As would be expected, the income elasticity estimate is much lower in the case of the all household regression (0.09), where the income variable was insignificant.¹⁷ The education level variable was not a statistically significant variable in either equation.

The number of performances attended was a significant variable for each sample. In addition, the off-site use variable was a significant variable in the regression for arts patron households. Overall, these results confirm the expectation that, even after accounting for household income level, households that use arts performances and exhibits will have a higher WTP to support an increase or to avoid a decrease in performances. Furthermore, it is interesting to note that in the

Table IV. Mean willingness-to-pay (WTP) as estimated by the parametric method

Survey group/scenario	Mean WTP
All households	
25% increase in performances	\$6.21
25% decline in performances	\$11.44
50% decline in performances	\$26.76
Arts patron households	
25% increase in performances	\$67.22
25% decline in performances	\$61.25
50% decline in performances	\$69.95

case of arts patron households, this appears to be true when households use arts performances off-site by reading about or watching them as well as when household members attend an event.

Regression results also suggest some difference in WTP under the three alternative scenarios included in the survey.¹⁸ For all households, estimates indicate that Kentucky households would pay much more to avoid a reduction in performances than to fund additional performances. The coefficient reported in Table III translates into an estimate that the average household is willing to pay roughly \$5 more annually to avoid a 25 per cent decline in arts performances than to fund a 25 per cent increase in the number of performances. Estimates further indicate that WTP rises with the scope of a possible decline in performances and exhibits. Coefficients in Table III translate into an estimate that the average Kentucky household is willing to pay roughly \$15 more to avoid a 50 per cent decline in the number of performances and exhibits than to avoid a 25 per cent decline.

For the arts patron sample, the coefficients for the scenario dummy variables are small and insignificant. One noteworthy finding in Table III is that the estimates indicate that arts patron households may be willing to pay more to expand the number of performances and exhibits than to avoid a decline.

4.3. *Willingness-to-Pay*

Coefficients from Table III can be used to estimate mean WTP for all households and arts patron households under each of the three scenarios. Table IV contains these results, which are roughly similar to those in Table II in terms of the ranking of mean WTP in the three different scenarios. Furthermore, for all households, the magnitude of the mean estimates are very similar using both the parametric and nonparametric approaches.¹⁹

For arts patron households, however, mean estimates are lower using a parametric approach than a nonparametric approach. This difference may result due to the large weight placed on responses to bids asking for \$500 in the nonparametric results. In the nonparametric approach, a substantial portion of the area under the bid curves occurred around and after the \$500 level (see Figure 1). In each of the three scenarios, this result occurred due to only one affirmative response for a \$500 bid, which had a substantial impact on the measured mean WTP. In the parametric approach, coefficient estimates were selected to fit data at all bid levels, which may have placed less weight on responses at the \$500 level.

Another interesting point is to look at the mean WTP estimates reported in Tables II and IV in the context of the actual donation behavior reported by survey respondents. Mean WTP to avoid a 25 per cent decline in the number of performances was \$12 on average for all households, while the mean WTP to avoid a 50 per cent decline was ranged from \$24 to \$27, depending on whether the parametric or nonparametric estimate was used. As reported earlier, survey responses indicated that all households had made monetary donations averaging \$37 over the 12 months before filling out the survey. WTP estimates were consistent with the magnitude of actual donation behavior.

Mean WTP to avoid a 25 per cent decline in the number of performances was \$61 to \$93 per year for arts patron households, depending on whether parametric or nonparametric estimates were used. WTP to avoid a 50 per cent decline ranged from \$70 to \$132. Survey responses indicated that arts patron households made monetary donations averaging \$230 in the previous 12 months. Again, estimated mean WTP was lower but of a similar magnitude. Furthermore, the ratio of mean WTP between arts patron households and all households is on average consistent with the 6 to 1 ratio (\$230 to \$37) that was found in reported donation behavior. Finally, while there is no theoretical reason why these donations and WTP should be equivalent, the similar magnitudes of reported WTP and reported donation behavior supports WTP results.²⁰

4.4. Attendee and Non-Attendee Households

As with the observed donation behavior of survey respondents, WTP is expected to differ between those households that have attended arts events versus those that have not. Attendee households, after all, obtain a use value from arts performances and exhibits, and therefore, are likely to assign a higher WTP to preserving or expanding the number of arts performances.

The coefficient on the attendance variable in the WTP equation can be used to estimate WTP for attendee and non-attendee households. Table V shows mean WTP for all households overall and for attendee and non-attendee households. There is a large difference in estimated WTP between attendee and non-attendee households. Depending on the scenario of performances to be retained or expanded, mean WTP among attendee households ranges from 80 per cent to 170 per cent greater than WTP among non-attendee households. This result

Table V. Mean WTP as estimated by the parametric method for all households, attendee households, and non-attendee households

Scenario	All households	Attendees	Non-attendees
25% increase in performances	\$6.21	\$8.48	\$3.14
25% decline in performances	\$11.44	\$14.45	\$8.00
50% decline in performances	\$26.76	\$36.74	\$17.87

is expected, although the difference is not as large as was found for reported donations, which were discussed above. In that case, donations in the preceding 12 months were just a few dollars on average for non-attendee households and average donations for attendee households were approximately 30 times greater.

Nonetheless, estimates of mean WTP among non-attendee households indicate that households that do not use arts performances, at least recently, are still willing to make smaller payments to retain or expand the number of performances. While these households do not receive use value, they appear to perceive an option or existence value for arts performances. The magnitude of this option and/or existence value ranges from just a few dollars to nearly \$18 annually, depending on the scenario presented.

4.5. Arts Donations and the Consumer Budget

Donations to arts organizations can be considered as simply another way in which households spend their money, that is, another kind of consumer expenditure. Thus, these expenditures can be viewed within the context of consumer expenditure theory, where households make a tradeoff regarding which goods or services to purchase or support. In the case of the arts, WTP to support the arts can be viewed as a component of household spending on entertainment. In particular, mean WTP can be compared with a consumer's entertainment expenditures on other entertainment goods such as movies, amusement parks, recreation, and arts performances and exhibits (as opposed to entertainment expenditures on television sets, pets, etc). Indeed, the survey specifically asked respondents to consider that the money they donated could instead be spent on entertainment expenses such as movie tickets or vacations, which contain both transportation and entertainment expenses. Therefore, how does mean WTP compare with an average household's expenditures on visiting entertainment venues?

Expenditure data was collected using the most recently available U.S. Consumer Expenditure Survey (U.S. Bureau of Labor Statistics, 1998). The data used were for Consumer Expenditure Units (roughly equivalent to households) headed by persons ages 45 to 54. Data were for the United States from 1995, the

most recent year available. Regional data were available but not by age cohort. This age cohort was selected because it contained both the mean age among respondents in the all household survey and had an average unit income quite close to the average household income in the all household survey. From these data, the average annual expenditure for fees and admissions to entertainment venues was \$585.

We used mean WTP values from the parametric analysis for all households, rather than arts patron households, because arts patron expenditure patterns may differ significantly from that of the average consumer. Recall that mean WTP was \$6.21 to fund a 25 per cent increase in arts performances, \$11.44 to avoid a 25 per cent decrease in performances, and \$26.76 to avoid a 50 per cent decrease in performances. Under these alternative scenarios, mean WTP values account for from 1 per cent to 5 per cent of consumer expenditures on entertainment fees and admissions, a modest share of this spending category.

4.6. An Estimate of National WTP to Support the Arts

The mean WTP values that have been estimated from the all household sample represent the average value that households in Kentucky place on expanding or maintaining a particular percentage of arts performances in the state. These estimates of mean WTP can be used to develop estimates for aggregate national WTP to expand or maintain a given percentage of arts events, by multiplying the mean WTP estimates for Kentucky by the total number of households in the United States. Such an approach implicitly would assume that mean WTP is similar in Kentucky and other parts of the nation. In fact, use of Kentucky averages may represent a lower bound estimate given the lower income and education levels in Kentucky, and perhaps, a smaller public arts good, that is, a lower level of arts performances and exhibits available to state residents.

The estimated national WTP to expand or maintain arts events can be obtained if the mean WTP estimates for Kentucky residents are used to estimate aggregate WTP across the approximately 98.7 million households in the United States (U.S. Department of Commerce, 1998). National WTP to expand the number of arts performances and exhibits by 25 per cent would be estimated as \$612.9 million. National WTP to avoid a 25 per cent decline in the number of arts performances and exhibits would be estimated as \$1,129.1 million. National WTP to avoid a 50 per cent reduction in arts events would be estimated at \$2,641.2 million.

4.7. A Comparison of Benefits and Costs

A statewide estimate of household WTP to expand or maintain a particular percentage of arts performances could be obtained by multiplying mean WTP values by the number of households in Kentucky. For example, the statewide estimate of WTP to avoid a 25 per cent decrease in performances and exhibits is es-

timated to be \$16.9 million based on 1.478 million households in Kentucky (U.S. Department of Commerce, 1998).

Statewide WTP could also be used in a benefit-cost analysis. Statewide WTP to avoid a decrease in performances is a measure of how much benefit households derive from maintaining these performances. Thus, statewide WTP could be compared to an estimate of the cost of support for arts performances and exhibits to yield a cost versus benefit comparison. In particular, the WTP to avoid a 25 per cent decrease in the number of performances could be compared to the cost of providing 25 per cent of performances.

The cost of supporting 25 per cent of existing arts performances and exhibits can be estimated based on the findings of a recent study into the revenues of Kentucky arts organizations (Thompson et al., 1998). That study found that these organizations had annual revenues of approximately \$101 million.

Based on these figures, it is possible to develop a range of estimates for how much it costs to support 25 per cent of existing arts performances and exhibits. One estimate could be derived based upon the assumption that the arts organizations cost structure represents about 50 per cent fixed costs and 50 per cent variable costs and that only the variable costs would be affected by the 25 per cent decrease in existing performances and organizations. Therefore, considering only variable costs, it would cost 25 per cent of \$50.5 million, or \$12.6 million, to stage 25 per cent of existing performances. Put another way, 25 per cent of existing arts performances and exhibits would not occur if \$12.6 million in revenues were lost.

Under this benefit-cost scenario, the annual net benefits of avoiding a reduction of 25 per cent of arts performances and exhibits in Kentucky would be \$4.3 million (\$16.9 million – \$12.6 million). If we consider the expenditures by arts organizations in the entire state, then this relatively small net benefit may be consistent with a relatively economically efficient allocation of resources. In other words, the marginal benefits from government or individual grants to support Kentucky arts organizations are close to the marginal costs of these grants. It must be remembered, however, that the cost information presented here is illustrative. Changes in the cost assumptions used here could yield different results, including cases in which the estimated marginal costs are greater than the marginal benefits.

5. Conclusion

This paper has used the contingent valuation method to determine how much residents of a state would be willing to pay to support additional arts performances and exhibits or to avoid decreases in existing performances and exhibits. This was accomplished through separate surveys of all households in Kentucky and of arts patron households in Kentucky. This paper uses the contingent valuation method to analyze the value of cultural amenities. The method has primarily been used to analyze the value of environmental amenities.

The study used both parametric and nonparametric techniques to estimate mean willingness-to-pay (WTP) to support the arts and reached similar estimates with each technique. Estimates of mean WTP to support a 25 per cent increase in arts performances and exhibits ranged from \$6 to \$8 annually per household while estimates of mean WTP ranged from \$11 to \$13 annually to avoid a 25 per cent decrease in performances and exhibits, and from \$24 to \$27 to avoid a 50 per cent decrease. Mean WTP was 3 to 13 times higher among arts patron households than among all households.

We found that mean WTP rose with the number of arts performances attended by household members. WTP to support arts performances also increased with the level of household income for arts patron households. Furthermore, for arts patron households, WTP rose as households consumed arts performances in less direct ways such as listening to performances on the radio, watching on television, or reading about performances in the newspaper or in magazines.

Overall, the contingent valuation method was effective for analyzing the arts. Moreover, this paper analyzes the value the public places on the composite arts good rather than specific arts entities and, hence, is useful for analyzing the public's value on changes in across-the-board funding for arts agencies, rather than just funding for individual agencies or organizations.

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Appendix I: Contingent Valuation Scenarios

Increase Arts Grants and Performances by 25 Per Cent

Arts organizations in Kentucky put on hundreds of theatre performances, music performances, and art exhibits throughout the state each year, employing both professionals and volunteers. Individual artists also produce art for sale, performances, and exhibits throughout Kentucky. Some of these performances are held in one of the 12 performing arts centers shown on the previous map.

Part of the funding to support arts organizations and performing arts centers comes from state and local tax dollars. Private donations are another important source of funding. In addition, many individual artists in Kentucky are chosen each year to receive grants of up to \$5,000 to support their work.

A fundraising organization has been founded in Kentucky to raise money to support more arts performances in Kentucky. The organization intends to raise enough money to allow the number of grants received by artists and the number of performances held by arts organizations at performing arts centers and other locations to increase by 25 per cent.

Given this scenario, would your household be willing to donate \$10²¹ each year to support this 25 per cent increase in Kentucky in performances and exhibits and grants to artists? Remember that any donated money could instead be spent for other purposes such as attending movies, going to concerts, or helping pay for vacations.

Decrease Arts Grants and Performances by 25 Per Cent or 50 Per Cent

Arts organizations in Kentucky put on hundreds of theatre performances, music performances, and art exhibits throughout the state each year, employing both professionals and volunteers. Individual artists also produce art for sale, performances, and exhibits throughout Kentucky. Some of these performances are held in one of the 12 performing arts centers shown on the map.

Part of the funding to support arts organizations and performing arts centers come from state and local tax dollars. Private donations are another important source of funding. In addition, many individual artists in Kentucky are chosen each year to receive grants of up to \$5,000 to support their work.

However, both state and local governments are planning to cut back government funding for these performing arts centers. This is expected to reduce the budgets for arts organizations, performing arts centers, and artists. As a result, performances held by arts organizations at performing arts centers and other locations as well as art by individual artists receiving grants will fall by 25 per cent.²²

Given this scenario, would your household be willing to donate \$10 each year to avoid this 25 per cent²² reduction in Kentucky in performances and exhibits and art produced by artists receiving grants? Remember that any donated money could instead be spent for other purposes such as attending movies, going to concerts, or helping pay for vacations.

Notes

1. The scope of support for and activity in the arts was evident in a recent study of arts in Kentucky entitled *Arts and the Kentucky Economy* (Thompson et al., 1998). For the purpose of that study, the "arts" was defined to include the following categories: music performances; dramatic performances/theatre; dance performances; exhibits of paintings, drawings, sculptures, and photography; and readings of literature or poetry. The study found that nearly one-half of Kentucky households had attended an arts event within the last year, while one-third had made monetary contributions to an arts organization, one in ten had volunteered time, and about one in ten had made in-kind contributions. These contributions, along with ticket and other purchases, supported hundreds of arts organizations throughout Kentucky. Indeed, the Kentucky Arts Council counts over 400 arts organizations in the state, many of them voluntary organizations. While many organizations are located in the larger urban areas of the state, some are also located throughout smaller Kentucky counties and communities.
2. Dian Magie, "Arts Funding into the 21st Century," commissioned by the President's Committee on the Arts and the Humanities for Creative America: A Report to the President, 1997, <http://californiaculture.net/nonprof/artfund.html>

3. Karen R. Nelson, "Who Gives?," National Endowment for the Arts, <http://www.arts.endow.gov/artsforms/Manage/Patron.html>
4. There have been numerous economic impact studies of arts organizations or state arts activities that have focused on the money brought into communities and states due to arts activities. This focus on the impacts of cultural tourism, however, does not address the issue of how much value that residents' place on arts activity in their community or state.
5. Survey recipients for the all Kentucky household random sample were obtained from InfoUSA, a market research firm. A sample of arts patrons households was compiled from lists of donors to and members of nine large arts performing and producing organizations in Kentucky, including orchestras, theatres, ballets, operas, and museums. A comprehensive list of patrons was compiled, and a random sample of this list was drawn.
6. Two surveys from the all Kentucky household sample that were returned did not contain answers to the contingent valuation questions. There were five such surveys from the Kentucky Arts Patron household sample.
7. The amounts were distributed among the survey samples as follows: 15% in each scenario received a \$10 amount, 20% received a \$25 amount, 20% received a \$50 amount, 20% received a \$75 amount, 10% received a \$150 amount, 10% received a \$500 amount, and 5% received a \$2,000 amount.
8. Another approach of dealing with hypothetical bias was used by Cummings and Taylor (1999). They read a script which tells participants that individuals tend to engage in yea saying and that what is desired is actual behavior. It too appears to mitigate hypothetical bias.
9. As is explained below, dummy variables were included in the analysis for observations where respondents did not answer survey questions for key model variables such as income or the number of times respondents had attended arts events in the last year. In the case of the all household sample, if a certainty of 10 is required then the number of affirmative responses drops low enough that some of these dummy variables are perfectly correlated with the dependent variable, and thus, the observations with missing values cannot be included in the analysis. This would require dropping observations, accounting for about one-fourth of the sample.
10. The extreme price categories of \$500 and \$2000 were used to determine the upper-bound price that no respondent would be willing to pay. Such an upper bound should be known in order to calculate a finite area under the curve.
11. The Fall 1997 Kentucky Poll is especially relevant for this study because it contains questions regarding whether members of each responding household attended an arts event in the last year. These were the same questions on attendance that were used in the all household and the arts patron surveys (U.K. Arts Survey).
12. Several questions were included in the survey to identify respondents who appeared to be protestors. Specifically, respondents who were not willing to pay the asked amount were asked why they responded negatively. The purpose was to determine whether respondents answered negatively because they do not value the arts enough to be willing to pay the amount specified or because they rejected the premise of the question that was asked. Respondents were given the following options for their negative response: (1) I don't believe that people should be asked for donations to support the arts, (2) I think the government should support the arts, (3) I don't think the money I will donate will really go to arts performances or exhibits, (4) I value the arts but was not willing to contribute the amount you specified, and (5) Other reason. Respondents giving answers 1 through 3 were considered to be protestors: they did not believe that households should be asked for donations (answers 1 and 2) or did not

believe that any money donated would be used properly (answer 3). Given these outlooks, it would be difficult for these respondents to agree to make the specified donation regardless of the value they place on arts performances or exhibits. On the other hand, respondents giving answer 4 were not identified as protestors because they accepted the willingness to pay concept but simply decided the specified amount was too high. Some responses listed under answer 5, (Other reason), were also considered protest responses. For example, respondents who said they would not make the requested donation because they already had donated money or who said they preferred specific donations (i.e., to a specific arts organization) over general donations were considered protestors. Likewise, those respondents who felt the arts should be self supporting or who indicated they had not received enough information were also deemed to be protestors.

13. In the un-smoothed data, the likelihood of an affirmative response rose with price over the \$25 to \$75 bid range. These unexpected results may have been possible due to the small sample sizes within each price category. There were only 5 non-protestor surveys returned for \$25 bids in the 50% reduction scenario, and 8 apiece for the \$50 and \$75 bids.
14. The survey question on education asked respondents to indicate the highest level of schooling completed, whether that was 8th grade or less, some high school, high school graduate, some college but no degree, associate degree, bachelor degree, or Master's degree, professional school degree, or doctorate degree. Responses were then converted into years of schooling for this variable.
15. In this approach, a dummy variable is assigned to each variable where there are missing observations, and the dummy variable is set to 1 in the cases of a missing observation, while the value variable is changed from missing to 0. This approach allows the observation to be included despite a missing variable. This occurred with the education and off-site use variables for the all household survey and with the education variable for the arts patron survey. In the all household survey, 14 of the remaining 125 observations were excluded due to missing variables, and in the arts patron survey, 5 of 281 observations were excluded.
16. This result is of interest since household characteristics are not always found to significantly influence WTP in contingent valuation studies (Ready at al., 1997).
17. The magnitude of the income variable is much greater in the all Kentucky households' regression if the education variable is removed. If this is done, the estimated income elasticity for mean WTP rises to 0.31 for all Kentucky households.
18. While not individually significant in the all household sample, the coefficients on the scenario dummy variables are jointly significant at the 10 per cent level, indicating some sensitivity by respondents to the magnitude of the scenario being considered.
19. Further, we believe our results from our all Kentucky households sample are consistent with what would be found with a larger sample size. To bolster this point, we combined data from our household survey with data from a similar contingent valuation survey of households that we conducted in the State of Mississippi. Both data sets of responses come from a random household survey asking a similar contingent valuation question. Further the states in question are similar. Both are located in the southern United States and have a large rural component to their population. Including the 76 returned and usable Mississippi surveys increases the sample size of household surveys by roughly two-thirds from 111 to 187. Adding the additional Mississippi data does not significantly change either regression results or survivor curves from non-parametric analysis. The bid amount and performance attendance variables remain significant in the combined sample equation, as in the Kentucky equation. Estimated mean WTP among households in the combined sample is similar to estimates

based on the Kentucky sample alone when using either the parametric and non-parametric approach. The sample sizes of 111 and 276 used in the parametric estimation in this paper are similar to the samples used in some recent published articles in the contingent valuation literature. These include Blumenschein, Johannesson, Blomquist, Liljas, and O'Connor (1998) ($n = 132$), Blumenschein, Johannesson, Yokoyama, and Freeman (2001) ($n = 172$), Gregory (2000) ($n = 180$), Kenkel, Berger, and Blomquist (1994) ($n = 122$), O'Connor and Blomquist (1997) ($n = 146$), Ready, Berger, and Blomquist (1997) ($n = 110$). Others have had somewhat larger data sets (e.g., Cummings and Taylor (1999) ($n = 239$ to 433), Whitehead and Hoban (1999) ($n = 313$ to 431, 734 pooled), and Carlson and Martinsson (2001) ($n = 140$ to 490, 980 pooled)). The two previous arts-related CVM studies were fortunate to be in the upper range of sample sizes among CVM studies (Martin, 1994, p. 264) ($n = 1, 231$) and Hansen (1997, Table II, p. 10) ($n = 1, 412$)).

20. WTP would likely exceed actual donations since individuals may not volunteer to donate the full value they place on the arts. In addition, it is not clear that WTP to preserve or expand a specified number of performances represents the same goal as the donation that an individual may make to one or more particular arts organizations, or arts councils.
21. Each household was randomly assigned a donation amount. The 200 surveys sent to households with the 25 per cent increase scenario were distributed with the following donation amounts: 30 surveys had a \$10 donation amount, 40 surveys had \$25, 40 surveys had \$50, 40 surveys had \$75, 20 surveys had \$150, 20 surveys had \$500, and 10 surveys had \$2,000.
22. The 50 per cent decrease scenario had the same wording but each reference to a 25 per cent decrease was replaced with a 50 per cent decrease.

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