The Effects of Different Types of Information Messages on Perceptions of Price and Stated Willingness-to-Pay

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The analyses reported here were undertaken on three data sets derived from surveys commissioned to identify likely visitor reaction to proposed large price increases in Texas state parks. One of the goals in each study was to assess the influence of alternate information messages on perceptions of price and stated willingness to pay. The messages used in each study were different, but there were some common themes among them. In two of the three data sets meaningful significant differences were found among responses to the information messages. Results supported, in part, the growing literature confirming the positive impact of cost of service information on raising stated willingness to pay. There was also some support for suggesting that messages relating to reduction of services, and subsidization of one park by visitors to other parks were effective in ameliorating resistance to price.

KEYWORDS: *State parks, price, willingness to pay, information messages, cost of service delivery, public sector*

Introduction

The Texas Parks and Wildlife Department (TPWD) proposed major increases in the admission prices to Texas state parks. The existing regular price varied across parks, but was typically between $3 and $6 per vehicle. The differential prices among state parks reflected TPWD's policy of permitting local state park managers to set prices at their facility. Since each park was permitted to retain 35% of all revenues raised from pricing to enhance its budget, there was incentive for managers to set relatively high prices. Thus, the differential prices reflected managers' perceptions of price elasticity of demand at their facility.

The new proposal was to change from $3 to $6 per *vehicle* to between $1 and $4 per *person* although children under the age of 12 would be admitted free of charge. Given that other surveys undertaken by TPWD indicated that the average number of people in a vehicle was close to four, if the shift to per person pricing was implemented it would lead to a substantial price increase for many visitors. In addition, seniors 65 and over previously

had been admitted free of charge, but under the proposed new policy they would be required to pay half the regular price.

The magnitude of the proposed increases led to a realization that there could be substantial visitor resistance, so before implementing them TPWD commissioned a series of three studies to evaluate likely visitor reactions. One of the goals of these studies was to ascertain if there were information strategies that could be used to ameliorate visitor resistance to the price increases. There was awareness of a body of empirical literature in the recreation field that consistently reported such strategies were likely to be effective in reducing stated resistance to price increases (Kyle, Kerstetter & Guadagnolo, 1999; McCarville, 1989; 1991; McCarville & Crompton, 1987a; 1987b; McCarville, Crompton & Sell, 1993; Reiling, Criner & Oltmanns, 1988; Schwer & Daneshvary, 1997).

The success of information messages in positively influencing perceptions of price increases has been primarily explained by adaptation level theory. This was first postulated by Helson (1964) and it suggests that visitors evaluate price comparatively by adapting to contextual and residual stimuli.

Helson (1964) postulated that level of adaptation is the pooled effect of three classes of stimuli: (1) focal stimuli; (2) background or contextual stimuli; and (3) residual stimuli. He defined adaptation level as "a weighted product of these three classes of stimuli" (p. 58) or "a weighted geometric mean of all stimuli impinging upon the organism from without and all stimuli affecting behavior from within" (p. 59). Thus, adaptation level theory suggests that changing these stimuli may result in changing perceptions of price which, in turn, is likely to influence the manner in which people evaluate price increases.

Focal stimuli are those to which visitors are exposed in state parks and that attract their attention. They include current price, quality condition, and services that are provided (McCarville & Crompton, 1987b). However, perceptions of focal stimuli are strongly influenced by contextual and residual stimuli that provide a framework within which an encoded message is evaluated.

McCarville and Crompton (1987b) referred to contextual stimuli as "background variables that provide the context within which the focal stimuli are considered" (p. 224). In the context of public swimming pools, they noted that contextual cues included knowledge of pool location, of services offered, and of the magnitude of city tax dollars used to subsidize the pool's operation. Crompton and Lamb (1986) suggested that contextual cues could be changed to increase clientele groups' perceptions of value, without improving facilities or services. Information messages offer one way of doing this and the empirical literature in recreation reviewed later in the paper validates this strategy.

Residual stimuli include visitors' value systems, and past experiences which establish price and quality expectations relating to a given service (McCarville & Crompton, 1987b). Helson (1964) suggested that "[residual] stimuli impinge upon organisms already adapted to what has gone before, and internal states depend upon previous existing conditions as well as ex-

ternal inciters to action" (p. 37). In this study, four residual stimuli were controlled in the two data sets in which these data were available: (1) importance of entrance price in the decision to go on a day visit or (2) an overnight visit; (3) visitation levels; and (4) income level. McCarville (1989) suggested that the economic and psychological importance of an entrance price was a manifestation of price sensitivity, and should be regarded as a residual stimulus likely to mediate in perceptions of admission price and willingness to pay. Previous studies also have regarded participation level as a residual stimulus (McCarville, 1991; Schwer & Daneshvary, 1997), while income level is widely recognized as being likely to be a mediator in explaining reactions toward admission prices.

The first study measuring the impact of communication messages on price perceptions in this field relied exclusively on adaptation level theory (McCarville & Crompton, 1987). It provided the conceptual rationale for using messages relating to cost of service and price of comparative services offered by other suppliers. Respondents compared the focal price to these contextual comparative measures and were consistently persuaded to raise it.

Subsequently, efforts have been made to explore the potential of prospect theory for extending the positive influence of adaptation level theory (Kahneman & Tversky, 1979). McCarville (1989) initiated this thrust and most other efforts have adapted the operationalization that he developed. Prospect theory postulates that people respond differently to a given potential outcome according to whether the outcome is framed in terms of gains to themselves or to others, or in terms of losses to themselves or to others. The studies reported here contribute to the tradition of using operationalizations that embrace both adaptation level theory and prospect theory.

Analyses were undertaken on three data sets which are described later in the paper. Three hypotheses were tested:

H1:   There will be no difference in stated willingness to pay half price for an annual pass or in stated willingness to pay half of the regular entrance fee among senior citizens who receive four different communication messages (Data set #1).

H2:   There will be no difference in perceptions of the reasonableness of daily admission prices among (i) park visitor respondents and (ii) non-park visitor respondents who received four different communication messages (Data Set #2).

H3:   There will be no difference in stated willingness to pay a daily admission price among visitors receiving six different communication messages to parks at which the per vehicle admission is currently $3, $4, $5, and $6 (Data Set #3).

Literature Review

McCarville and Crompton (1987a) were the first in this field to report work on the effects of information messages on perceptions of reference prices relating to a public leisure service. Their context was a swimming pool.

A control group was provided with no price related information (group 1). Three treatment groups were given information pertaining to the cost of service delivery to the agency (group 2); the price charged at a commercial alternative (group 3); and both the cost of service delivery and the price at a commercial alternative (group 4). Responses to the question, "What would you expect to pay for a swim at a city pool?" after respondents were given the different information messages, indicated that Group 4 offered the highest reference price, followed by Groups 2, 3, and 1. In two of the three treatment groups the mean prices were significantly higher (.05 level) than those reported by the control group. In group 3 the mean price was 21% higher than the control group but the difference was not significant.

Reiling, et al. (1988) tested the effect of different information messages on users' attitudes toward campground fees in selected Maine State Park campgrounds. Respondents were asked to indicate whether they thought the current fee at state park campgrounds was too low, too high or about right, or whether they were undecided. Next they were informed of the average fee charged at Maine commercial campgrounds (which was higher) that offered similar facilities and services to those provided at the state campgrounds. Finally, they were informed of the per site cost to the state of providing the service, which was approximately double the current price being charged. After each of the two treatments, respondents again indicated whether they considered the price too low, too high, or about right, or were undecided. The authors reported that both sets of treatment information were effective in improving users' levels of acceptance of higher prices.

McCarville (1989) investigated the effects of information messages on reference price among participants in Jazzercise classes provided by a hypothetical public parks and recreation department. He used two control groups and four treatment groups. Control Group 1 was provided only with program information. Control Group 2 was given program and cost-of-service provision information. The remaining treatment groups reflected the first attempt to operationalize prospect theory in this context. Treatment Group 1 was given the same program and cost-of-service information, and additional information indicating that there would be a personal loss to participants if they did not pay a higher price. The same program and cost-of-service message was supplemented with information indicating a personal gain that would accrue to Treatment Group 2 if they paid more. Treatment Group 3 was given the same program and cost-of-service message, and information indicating that others would lose if they did not pay more. The message given to Treatment Group 4 indicated that others would gain if they paid more, as well as providing the basic program and cost-of-service information.

Respondents were asked in an open-ended question what they would expect to pay for a session of 12 aerobics program classes, if they were purchasing them today for their own use. With the exception of Control Group 1, every group was informed that the cost of the public recreation department providing each participant with the instructors, electricity and maintenance necessary to offer this Jazzercise program was $50.

Average reference prices among the groups were: Treatment Group 4, $40.01; Treatment Group 1, $37.78; Control Group 2, $36.11; Treatment Group 2, $35.56; Treatment Group 3, $34.67; and Control Group 1, $33.16. Analyses indicated that the information messages relating to program, cost of service and benefits to others (Treatment Group 4), program cost-of-service, and personal loss (Treatment Group 1), program, cost-of-service, and personal gain (Treatment Group 2), and program and cost-of-service provision (Control Group 2) resulted in higher reference prices than the messages incorporating loss to others (Treatment Group 3) and program only information (Control Group 1) did. However, levels of reference prices of all six groups were lower than the suggested price of $50, indicating that respondents expected the agency would subsidize the program.

McCarville's 1991 study used 77 college students as respondents assigning them to a control group and to a treatment group which was given cost-of-service information. The context was stated willingness to pay for a hypothetical series of public aerobics classes. Although the mean stated willingness to pay of the control group was $29.02 and that of the treatment group was $38.16, the difference was not statistically significant at the .05 level because of high variations in response levels of willingness to pay and the relatively small sample sizes.

McCarville, et al. (1993) replicated McCarville's 1989 study with some minor amendments in the context of a hypothetical public agency aerobics class. The 224 college students in McCarville et al.'s 1993 study were randomly assigned into six groups, receiving comparable messages to those delivered in the original study. Analyses revealed that subjects were particularly responsive to the message suggesting that other participants would suffer if the subjects failed to generate sufficient revenues from fees to meet their own program costs. The mean reference price of this group was 41% higher than that of the control group. The message that focused on personal benefit arising from price revenues also significantly elevated reference price levels. The lowest prices were reported by the control group who received only program information and those who were told that they might lose access to the program opportunities.

Schwer and Daneshvary (1997) assessed the effect of information on visitors' attitudes towards tour fees for a tour of the Hoover Dam Power plant. They used three scenarios. In the control scenario, respondents were informed that the fees for a guided tour of the Hoover Dam power plant were adults, $4; seniors, $2; and children 12 and under, free. In a subsequent scenario, the same respondents were provided with additional information on entrance prices at other well-known tourist attractions. This scenario was designed to encourage comparison of tour fees at the Hoover Dam power plant with higher entrance fees charged at other tourist attractions. Finally, respondents were given a second treatment scenario which gave the daily operating cost of the power plant tour. After receiving each scenario respondents were asked, "Do you think that the power plant tour fee is too high, too low, just right, or undecided?" The authors reported that the two treatments' information had a significant impact on attitude change, reflecting a

substantial percentage of subjects who responded that the fees were "too high" moving to the other categories, "too low," or "just right" after they received the two information messages. The data suggested that the operating cost information was more influential than was information on prices at other tourist attractions.

Kyle et al. (1999) confirmed the influence of cost of service messages using a sample of runners in a major 10 kilometer race. Respondents were given six communication messages similar to those developed by McCarville et al. (1993). All five of the treatment messages produced a stated willingness to pay price that was significantly higher than that given by the control group ($16.45). The highest scores were reported by groups receiving the "lose" and "take" messages. These stated that if the entry fees collected for the race failed to meet the costs associated with staging the event, then the race may be cancelled ("lose"), or funds designated for other recreation programs would be transferred to assist with the race's administration ("take"). Mean prices of the four groups exposed to the "lose" ($21.47), "keep" ($20.03), "take" ($21.05) and "give" ($20.68) scenarios which also incorporated the cost of service information were all higher than the groups receiving only the cost of service information ($19.86), but not significantly higher. Since none of these four group means were significantly higher than the cost of service group's mean, the authors concluded that the decisive influence in raising reference price was the cost of service component in the five messages.

In summary, almost all of the existing empirical literature reported that information messages had a positive influence on reference price, stated willingness-to-pay, or perceptions of price, and some findings consistently emerged. First, the control message containing only program information was relatively ineffective. Second, respondents who received both program and cost of service information reported a higher reference price or stated willingness to pay than those who received only program information. Third, in some instances additional messages to cost of service information raised reported reference price or stated willingness to pay levels. Among these messages, the two most effective appear to be the take and loss scenarios which refer, respectively, to taking resources from other participants in order to subsidize the individual's experience, and reducing the services available to a user.

Description of the Data Sets

Analyses were undertaken on selected questions from three data sets commissioned by TPWD which are described in the following paragraphs. The agency's expectation was that information from these surveys would be used to ameliorate price resistance, which would reduce both political criticism and the park visitation losses that it was anticipated could arise when the agency implemented its proposed substantial price increases.

Data Set #1: Bluebonnet Pass Holders

At the time of this survey, all park visitors who were 65 years of age or older were entitled to request a Bluebonnet Parklands Pass which gave them free admission for life to Texas state parks. This pass was available to both residents and non-residents. Since it was a vehicular pass, it meant that all occupants of a vehicle in which there was a senior citizen received free admission to the parks. Financial pressures required TPWD to end this policy of free admission. The study was intended to provide information on seniors' responses to being charged. It was requested by the Texas state legislature which had to give TPWD the authority to initiate such a charge. One of the study's objectives was to determine the most effective message for communicating the need to charge senior citizens $12.50 (half-price) for an annual Texas Conservation Passport (which was the name of the annual pass), and to charge half the daily price of $3 to $5 for daily admission to Texas state parks so resistance to imposing these proposed fees would be minimized.

Each respondent in the sample received one of four versions of a questionnaire that was jointly developed by TPWD personnel and by the authors. The questionnaires were identical except for different messages associated with a question which asked whether or not the respondent would pay $12.50 for an annual Texas Conservation Passport or half the daily price of $3 to $5 for daily admission to a park. The four versions of the question are reproduced in Table 1. Version 1 was the control group message. Respondents receiving this questionnaire were given no information about potential consequences of them not agreeing to pay either the annual or the daily fee alternative. The experimental groups received versions 2, 3, and 4 of the questionnaire that contained messages communicating different consequences. If respondents indicated they would not pay the new annual pass fee, then they were asked in an alternative question if they would be willing to pay half the proposed per visit entrance fee. The wording of this alternative question is shown at the end of Table 1.

In each of the previous four years, approximately 40,000 lifetime Bluebonnet Parklands Passes were issued to senior citizens by TPWD. A sample of approximately 1,000 names was chosen randomly from each of those years' lists and this constituted the study sample.

The initial mailing consisted of 4,093 surveys. The four different communication messages in the questionnaires were alternated i.e., respondents 1, 2, 3, 4, 5, 6 . . . received communication messages 1, 2, 3, 4, 1, 2, . . . , respectively. A reminder postcard was sent a few days after the initial mailing. A second mailing to those who had not responded was sent two and a half weeks after the initial mailing and a third mailing to the remaining non-respondents was sent two weeks after the second mailing. Of the 3,715 individuals for whom the addresses used in the survey were correct, 2,849 responded, yielding a 76.7% response rate. However, 384 of the respondents did not answer the willingness to pay questions. Thus, analyses were undertaken on the remaining 2,465 responses.

TABLE 1
The Control and Three Treatment Messages Used in Data Set #1

RUBRIC COMMON TO ALL FOUR VERSIONS:
Currently, visitors to Texas State Parks may purchase an annual *Texas Conservation Passport (TCP)* for $25.00. The annual passport offers free entry to all state parks, overnight camping discounts at state parks, discounts on the *Texas Parks and Wildlife* magazine, guided tours at some of the most beautiful wilderness havens in Texas, and provides funds to support conservation in Texas.

Version 1 (Control message): If the Parklands (Bluebonnet) Pass was discontinued, would you pay $12.50 (half price) each year for an annual Texas Conservation Passport? This would entitle you and those who are with you in your vehicle to the benefits described above *and* a $1.00 per night discount on camping.

Version 2 (Cost information): All revenues, including admission fees, only contribute 62% to the cost of operating and maintaining Texas state parks. Thus, 38% of the costs are subsidized by tax support from all residents of the state.

Given the CUTS in tax support facing the state parks system, the Parklands (Bluebonnet) Pass may be discontinued. If it was discontinued, would you pay $12.50 (half price) each year for an annual Texas Conservation Passport? This would entitle you and those who are with you in your vehicle to the benefits described above *and* a $1.00 per night discount on camping.

Version 3 (Cost information and reduction of service): All revenues, including admission fees, only contribute 62% to the cost of operating and maintaining Texas state parks. Thus, 38% of the costs are subsidized by tax support from all residents of the state. Reductions in this support make it likely that the department will have to consider reductions in the level of service and opening hours of some state parks.

If the Parklands (Bluebonnet) Pass was discontinued and if your payments reduced the extent or lowered levels of service, decreased opening hours or the possibility of closure of some state parks, then would you pay $12.50 for an annual Texas Conservation Passport? This would entitle you and those who are with you in your vehicle to the benefits described above *and* a $1.00 per night discount on camping.

Version 4 (Cost information and others requested to pay more):
All revenues, including admission fees, only contribute 62% to the cost of operating and maintaining Texas state parks. Thus, 38% of the costs are subsidized by tax support from all residents of the state. Reductions in this support make it likely that if seniors are not prepared to pay an entrance fee to state parks, then higher fees will have to be charged to all other users of the parks, because fees and concessions are the only sources available to make up the projected dollar shortage.

Given the likelihood that others will have to pay higher fees if seniors are not prepared to pay admission fees, if the Parklands (Bluebonnet) Pass were discontinued would you pay $12.50 each year for an annual Texas Conservation Passport? This would entitle you and those who are with you in your vehicle to the benefits described above *and* a $1.00 per night discount on camping.

Alternative Question. "If no, although you are not willing to pay $12.50 each year for an annual Texas Conservation Passport, would you pay half of the regular daily entrance fee each time you visit a Texas state park? Currently, the daily entrance fee to most Texas state parks is from $3.00 to $5.00.
_____ Yes _____ No"

Data Set #2: Texas License Plate Holders

Respondents received one of the four different communication mes-
sages shown in Table 2. Version 1 was the control message. Versions 2, 3 and
4 provided messages that communicated different consequences. Each ver-
sion was mailed to 800 respondents who were randomly allocated to the
control and experimental groups. Each quarter of the sample was presented
with the same admission price information ($3 to $5 per vehicle), but given
one of the different messages shown in Table 2. After reading the contextual
information, respondents were asked to report their perceptions of the cur-
rent admission price on a 5-point Likert-type scale ranging from "Much too
low" to "Much too high." They were also given the option to check, "Don't
know."

A sample of 3,200 names was chosen randomly from a list of those hold-
ing a current Texas driving license which was made available by the Texas
Department of Transportation. Since driver licenses are renewed only once
every five years, 512 people were not contactible because of address changes.
Thus, the effective sample size was 2,688. The four different versions of the

TABLE 2
Control and Treatment Messages Used in Data Set #2

Version 1 (Control message): Daily admission fees to Texas State Parks currently range from
$3.00 to $5.00 per vehicle. Is this (Circle one):

Version 2 (Information relating to the price charged at other types of recreation facilities):
The average stay by day visitors to a Texas State Park is between 3 and 6 hours. Most away-
from home leisure time activities today cost about $3 per hour per **person**, e.g., theme parks,
golf courses, bowling centers, etc. Daily admission fees to Texas State Parks currently range
from $3 to $5 per vehicle, or about $.85 to $1.45 per person. Is this (Circle one):

**Version 3 (Information relating to the proportion of state parks' operating costs which were
covered by revenues):** All revenue, including admission fees, only contributes about 62% to
the cost of operating and maintaining Texas State Parks. Thus, about 38% of the costs are
subsidized by tax support from all residents of the state, some of whom are not users of state
parks. Current admission fees to Texas State Parks range from $3.00 to $5.00 per vehicle. Is
this (Circle one):

**Version 4 (Cost information of Version 3 and information about the decline in tax fund
support for state parks and the possible outcomes of reduced services or operating hours):**
All revenue, including admission fees, only contributes about 62% to the cost of operating
and maintaining Texas State Parks. Thus, about 38% of the costs are subsidized by tax support
from all residents of the state, 21% of whom have never used a state park. It was decided in
the last session of the Texas legislature that the Texas Parks and Wildlife Department would
receive less tax support for the state park system. Consequently, it is possible that the
Department will have to drastically reduce the levels of service or decrease opening hours at
some state parks. Daily admission fees to Texas State Parks currently range from $3.00 to
$5.00 per vehicle. Given the cuts in tax support, are these fees (Circle one):

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questionnaire were mailed so that version 1 went to the first 800 names on the list, version 2 to the next 800 names, and so on. A reminder postcard was sent four days after the initial mailout. A second mailing went to those who had not responded two weeks after wave 1, and a final mailing to non-respondents occurred four weeks after wave 1. An incentive was provided to those completing the questionnaire. They were entered into a drawing and five winners were given a free annual pass to the state parks. The total response rate was 40.7%.

Data Set #3: Visitors to 12 Texas State Parks

The survey was conducted in parks which charged four different prices for per vehicle entrance ($3, $4, $5, $6). Successive respondents selected for the sample at each park were given one of six different information messages, which are reproduced in Table 3. A sample of approximately 400 visitors from each of 12 parks was selected. At each park, surveys were passed out to every n^{th} person over a two day period. The n size was determined by the rate of traffic entering the park. Respondents were sent reminder postcards and second and third wave mailings, and were offered an incentive for returning the questionnaire. The effective sample size was 4.291 and a response rate of 69% was obtained.

Results

H1: There will be no difference in stated willingness to pay half price for an annual pass or in stated willingness to pay half of the regular entrance fee among senior citizens who receive four different communication messages (Data Set #1).

Respondents were classified into three groups: (1) those who were willing to pay half price for an annual pass; (2) those who were willing to pay half the regular daily admission price; and (3) those who were not willing to pay either half price for an annual pass or half the regular admission price. The responses of those in groups 1 and 2 who gave an affirmative response were aggregated and a chi-square test was performed. Table 4 indicates that the chi-square was significant, suggesting that the communication messages had a differing effect in persuading respondents to pay half-price. Thus, hypothesis 1 was rejected, but it was noted that the range of difference in levels of acceptance was relatively small among the four different messages—from 77% to 82%.

H2: There will be no difference in perceptions of the reasonableness of daily admission prices among (i) park visitor respondents and (ii) non-park visitor respondents who received four different communication messages (Data Set #2).

Table 5 shows results of an analysis of covariance (ANCOVA) used to investigate the relationship between perceptions of daily admission prices among park visitor respondents and the four information messages, while

TABLE 3
Control and Treatment Messages Used in Data Set #3

Version 1 (Control message): If state park entry fees are changed from per-vehicle to per-person fees, what is the most you would be willing to pay per-person for entry to this state park **without reducing the number of days and nights** you or your family members spend in this park?

Version 2 (Cost information message): All income from park users, including entrance fees, contributes about 60 percent of the cost of operating and maintaining Texas state parks. *Thus, about 40 percent of the costs are subsidized by various taxes paid by all residents of the state, some of whom may never use state parks.* It was decided in the last session of the Texas Legislature that the Texas Parks and Wildlife Department would receive less tax support for the state park system. This means that a larger proportion of funds have to be generated by entrance fees. Given this background, please respond to the following question.

Daily entrance to this state park is currently ___ per vehicle. If state park entrance fees are changed from per-vehicle to per-person, what is the most you would be willing to pay per person for entrance to this state park **without reducing the number of days and nights** you or your family members spend in this park?
[*The second paragraph was replicated in treatments 2 through 6 and the appropriate monetary value ($3, $4, $5, or $6) was inserted in the space in the first line*].

Version 3 (Cost information and cost of other leisure services message): All income from park users, including entrance fees, contributes about 60 percent of the cost of operating and maintaining Texas state parks. *Thus, about 40 percent of the costs are subsidized by various taxes paid by all residents of the state, some of whom may never use state parks.* It was decided in the last session of the Texas Legislature that the Texas Parks and Wildlife Department would receive less tax support for the state park system. This means that a larger proportion of funds have to be generated by entrance fees.

The average stay by day visitors to a Texas state park is between 3 and 6 hours. Most away-from-home leisure time activities today cost about $3 per hour per person e.g. theme parks, golf courses, bowling centers etc. Given this background please respond to the following question.

Version 4 (Cost information and reduction of service message): All income from park users, including entrance fees, contributes about 60 percent of the cost of operating and maintaining Texas state parks. *Thus, about 40 percent of the costs are subsidized by various taxes paid by all residents of the state, some of whom may never use state parks.* It was decided in the last session of the Texas Legislature that the Texas Parks and Wildlife Department would receive less tax support for the state park system. This means that a larger proportion of funds have to be generated by entrance fees.

If the entrance fees of this state park fail to cover the operation and maintenance costs of the park, then it is possible that **its levels of service may have to be drastically reduced or its operating hours decreased.** Given this background please respond to the following question.

TABLE 3
(Continued)

Version 5 (Cost information and subsidy by other park users message): All income from park users, including entrance fees, contributes about 60 percent of the cost of operating and maintaining Texas state parks. *Thus, about 40 percent of the costs are subsidized by various taxes paid by all residents of the state, some of whom may never use state parks.* It was decided in the last session of the Texas Legislature that the Texas Parks and Wildlife Department would receive less tax support for the state park system. This means that a larger proportion of funds have to be generated by entrance fees.

If the entrance fees collected in THIS state park fail to meet the costs of operating and maintaining it, then the only way to avoid reducing its services or drastically curtailing its operating hours may be to transfer money to THIS state park from ANOTHER state park. In other words, visitors to other state parks would be subsidizing visitors to this state park. Given this background please respond to the following question.

Version 6 (Retention of revenues for improvements in that park message): In the past, entrance fees from state parks all went back to the Texas Parks and Wildlife Department's central fund in Austin, and the administrators then decided how this money should be allocated to parks throughout the whole state parks system. However, budgeting procedures are being changed so that a large proportion of the revenues generated in this state park now will stay in this state park. Thus, entrance fees paid by visitors to this state park will be used to improve the amenities in this state park for those visitors. Given this background, please respond to the following question.

TABLE 4
Distribution of Responses on Data Set #1 Across the Four Communication Messages

	Message 1		Message 2		Message 3		Message 4	
	%	Rank	%	Rank	%	Rank	%	Rank
Willingness to pay half price for an annual pass ($n = 2,465$)	39.0%	4	39.3%	3	47.5%	1	41.4%	2
Willingness to pay half of the regular entrance fee ($n = 1,428$)	61.8%	4	67.0%	2	63.6%	3	67.4%	1
Aggregate of those willing to pay either half price for an annual pass or half of the regular entrance fee ($n = 2,501$)	77.3%	4	81.0%	3	81.2%	2	81.7%	1

$\chi^2 = 14.36$ d.f. $= 6$ $p = .026$
Message 1: Control message, Message 2: Cost information, Message 3: Cost information and reduction of service, Message 4: Cost information and others requested to pay more

TABLE 5

Results of Analysis of Covariance Testing Hypothesis 2 Among
Park Visitors (n = 631)

Source of Variation	Sum of Square	d.f.	Mean Square	F-Value	P-Value
Covariate (projected number of day visits)	1.13	1	1.13	3.59	.06
Covariate (projected number of overnight visits)	.47	1	.47	.12	.72
Covariate (income)	6.60	1	6.60	21.06	.00
Main effect (four information messages)	13.61	3	4.54	14.46	.00
Explained	22.38	6	3.73	11.89	.00
Residual	195.70	624	.31		
Total	218.08	630	.35		

holding constant projected number of day visits, projected number of over-
night visits, and income. The responses to increases in admission price could
extend from reducing the number of visits to deciding not to visit the park.
It was important to control for this in order to retain the study's focus on
perception of admission price. The dependent variable, perceptions of the
current admission price, was measured on a 5-point Likert-type scale ranging
from "much too low" (1) to "much too high" (5). The main effect was
significant at the .001 level, indicating that the four information messages
did have a differential influence on perceptions of daily admission prices.
Thus, the first part of the hypothesis was rejected. Income as a covariate was
significant at the .001 level. A subsequent Duncan's multiple range test re-
vealed that there was a significant difference between the response to mes-
sages 1, 2, and 3, and message 4, indicating that message 4 was significantly
more effective (Table 6).

Results of a similar ANCOVA analysis on non-park visitor respondents
are reported in Table 7. The second part of the hypothesis was also rejected,

TABLE 6

Results of Duncan's Multiple Range Comparison of Treatment Group
Means Among Park Visitors

Treatment Groups	Mean Score	Grouping*
Message 1 (Control message)	2.99	A
Message 3 (Information relating to the proportion of state parks' operating costs which were covered by revenues)	2.98	A
Message 2 (Information relating to the price charged at other types of recreation)	2.88	A
Message 4 (Cost information of version 3 and information about the decline in tax fund support for state parks and the possible outcomes of reduced services or operating hours)	2.59	B

*The same letters indicate no significant difference between mean values.

TABLE 7

Results of Analysis of Covariance Among Non-Park Visitors (n = 261)

Source of Variation	Sum of Square	d.f.	Mean Square	F-Value	P-Value
Covariate (importance of the admission price)	6.95	1	6.95	20.77	.00
Covariate (income)	1.58	1	1.58	4.71	.03
Main effect (four information messages)	11.42	3	3.81	11.38	.00
Explained	25.49	5	5.10	15.24	.00
Residual	85.34	255	.34		
Total	110.83	260	.43		

because there were significantly different effects among the four information messages on perceptions of daily admission prices. Importance of the admission price and income as covariates were significant at the .001 level and .05 level, respectively. A subsequent Duncan's test indicated that those receiving messages 3 and 4 were significantly more receptive to the proposed new admission prices than those receiving messages 1 and 2 (Table 8).

H3:   There will be no difference in stated willingness to pay a daily admission price among visitors receiving six different communication messages to parks at which the per vehicle admission is currently $3, $4, $5, and $6 (Data Set #3).

Analysis of Covariance (ANCOVA) was used to identify differences in stated willingness to pay a daily admission price among visitors who received six different messages after holding constant projected number of day visits, projected number of overnight visits, importance of admission price on a day visit, importance of admission price on an overnight visit, and income. Separate analyses were undertaken on respondents from parks which had

TABLE 8

Results of Duncan's Multiple Range Comparison of Treatment Group Means Among Non-Park Visitors (n = 290)

Treatment Groups	Mean Score	Grouping
Message 1 (Control message)	3.07	A
Message 2 (Information relating to the price charged at other types of recreation)	2.93	A
Message 3 (Information relating to the proportion of state parks' operating costs which were covered by revenues)	2.63	B
Message 4 (Cost information of version 3 and information about the decline in tax fund support for state parks and the possible outcomes of reduced services or operating hours)	2.53	B

different current per vehicle admission prices of $3, $4, $5, and $6, to elim-
inate variations that might be attributable to these four levels of existing
prices. The sample was limited to respondents who did not have an annual
pass because it was believed annual pass holders were less likely to be con-
cerned about the level of daily admission prices.

ANCOVAs undertaken on data collected from those at the $4 and $6
parks indicated there were no significant differences among the six com-
munication messages, so the hypothesis should not be rejected. However,
significant differences in the messages' effects were identified at the $3 and
$5 parks, suggesting the hypothesis could be rejected. At the $3 parks, the
importance of admission price on a day visit was a significant covariate (Table
9). However, a Duncan's test indicated the main effect significant difference
was between the mean stated willingness-to-pay of the control group and the
cost information and reduction of service message and that this was in the
opposite direction to what was expected (Table 10). The mean stated will-
ingness to pay of the control group was significantly higher than that of those
receiving the reduction of service message.

At the $5 parks, importance of admission price on a day visit and income
were significant covariates, indicating that those in lower income cohorts and
with perceived high sensitivity to the day visit admission price reported sig-
nificantly lower stated willingness to pay (Table 11). A Duncan's test indi-
cated a significant difference between messages 5 and 6 (Table 12).

Discussion

Hypothesis 1 was rejected indicating that the stated willingness of senior
citizen park visitors to pay half the regular price was influenced by the in-
formation message they received. However, the distinctive feature of these
data was not the difference between the messages, which was relatively small,
but the large proportion of respondents receiving each message who sup-
ported one of the two half-price payment options. Ostensibly, this finding

TABLE 9
Results of Analysis of Covariance at $3 State Parks ($n = 257$)

Source of Variation	Sum of Square	d.f.	Mean Square	F-Value	P-Value
Covariate (projected number of day visits)	1.54	1	1.54	1.27	.26
Covariate (importance of the admission price on a day visit)	24.21	1	24.21	19.91	.00
Covariate (income)	1.22	1	1.22	1.01	.32
Main effect (six information messages)	16.57	5	3.31	2.73	.02
Explained	52.21	8	6.53	5.37	.00
Residual	301.53	248	1.22		
Total	353.73	256	1.38		

TABLE 10

Results of Duncan's Multiple Range Test of Treatment Group Means at $3 State Parks

Treatment Groups	Mean ($)	Grouping	
Message 1 (Control message)	2.04	A	
Message 5 (Cost information and subsidy by other park users message)	1.79	A	B
Message 3 (Cost information and cost of other leisure services message)	1.72	A	B
Message 2 (Cost information message)	1.61	A	B
Message 6 (Retention of revenues for improvements in that park message)	1.36	A	B
Message 4 (Cost information and reduction of service message)	1.32		B

TABLE 11

Results of Analysis of Covariance at $5 State Parks ($n = 873$)

Source of Variation	Sum of Square	d.f.	Mean Square	F-Value	P-Value
Covariate (importance of the admission price on a day visit)	91.61	1	91.61	70.58	.00
Covariate (income)	30.86	1	30.86	23.78	.00
Covariate (projected number of day visits)	4.62	1	4.62	3.56	.06
Main effect (six information messages)	13.97	5	2.80	2.22	.05
Explained	184.01	8	23.01	17.72	.00
Residual	1121.45	864	1.30		
Total	1305.46	872	1.50		

TABLE 12

Results of Duncan's Multiple Range Test of Treatment Group Means at $5 State Parks

Treatment Groups	Mean ($)	Grouping	
Message 5 (Cost information and subsidy by other park users message)	2.30	A	
Message 2 (Cost information message)	2.22	A	B
Message 3 (Cost information and cost of other leisure services message)	2.07	A	B
Message 1 (Control message)	2.06	A	B
Message 4 (Cost information and reduction of service message)	2.03	A	B
Message 6 (Retention of revenues for improvements in that park message)	1.89		B

was surprising. However, Crompton (1984) pointed out that on average seniors have higher per capita disposable incomes than those under the age of 65. In addition, they pay less in personal taxes, have no child-rearing expenses, and no work-related expenses so their discretionary income is relatively substantial. Thus, he proposed that park and recreation agencies should move towards requiring senior citizens to pay full price. The findings of this study appear to reinforce his argument because irrespective of the message they received most senior citizens indicated a willingness to pay half-price to use state parks for which they currently did not pay a fee.

Despite the relative parity of responses, the data in Table 4 do show some consistent patterns in that in each case the control message was least effective, while messages 2, 3 and 4 were consistently more effective messages. Among those indicating a willingness to pay half of the regular entrance fee, message 4 was marginally the most effective. The relative effectiveness of message 4 is consistent with McCarville's (1989), McCarville et al.'s (1993) and, to a lesser extent, Kyle et al.'s (1999) findings that respondents who received a message positioning them as "takers" are prepared to pay a higher price. This response may be attributed to the proposal being an affront to the pride of senior citizens, or to an acceptance of the philosophy of a reciprocal altruism (Dawes & Thaler, 1988; McCarville et al., 1993). The notion of altruistic and cooperative behavior is contrary to the classic economic assumption that rational decision making is based on maximum utility, but it may be an influential consideration in visitors' acceptance of price increases.

Message 3, which included information concerning potential reduction of services and service costs, was the most effective in increasing stated willingness to pay half price for an annual pass. This result again appears to reinforce those of McCarville (1989) and Kyle et al., (1999), and to refute those in McCarville et al.'s (1993) study which reported that "loss" information was not substantially effective in enhancing reference price. The relative effectiveness of the "loss" scenario can be explained by prospect theory which suggests that people ascribe more pain to losses than they ascribe pleasure to equal amounts of gain (Kalapurakal, Dickson, & Urbany, 1991; Martins & Monroe, 1994; Tversky & Kahneman, 1981). People tend to be risk-averse when considering gains, but are more willing to change their behavior when confronted with the prospect of losses (Nagle & Holden, 1995). Thus, prospect theory suggests that framing messages in terms of potential losses is likely to be more effective in facilitating price increases because park visitors are concerned with avoiding negative consequences.

Hypothesis 2 was also rejected. All three treatment groups among both the visitor and non-visitor samples reported that the control group message was least effective. Data set 2 did not include messages relating to take, give or keep, but it did include a loss message. Consistent with other operationalizations of the loss message in data sets 1 and 3, and in previous studies (McCarville, 1989; McCarville et al., 1993; Kyle et al. 1999), the loss message incorporated cost of service information as well as presenting the outcome of potential reduction in services or operating hours.

Among park visitors, the loss message was significantly more effective in raising perceptions of the reasonableness of price than the other three information messages giving the control, comparative price, and cost of service information. Among the non-visitor sample, the loss and the cost of service messages were significantly more effective than the control and comparative price messages.

The cost of service information appears likely to have resonated with non-park visitors. From their perspective, it is rational for prices to be raised so they do not have to provide as much support for state parks through their taxes. Information postulating a reduction of services was likely to resonate with park visitors because it directly threatened the quality of their experience. These findings appear to reinforce those emerging from data set 1.

Results from the analyses testing hypotheses 3 were not consistent. At the $4 and $6 parks there were no significant differences among respondents receiving the six messages. At both the $3 and $5 parks there was only one significantly different message, and in one of those cases it was antithetical to the expected direction. Thus, hypotheses 3 could not be rejected.

At $3 state parks, respondents who received a message with cost information and reduction of service information, unexpectedly showed a significantly lower stated willingness to pay a daily admission price, than those who were exposed to the control message. At $5 state parks, a significantly higher stated willingness to pay was found among those receiving the cost information and subsidy by other park users message, than among those receiving the retention of revenues message.

Two reasons are suggested which might help to explain the unexpected results emerging from hypothesis 3. First, the contingent valuation method (CVM) used to measure stated willingness to pay was based on somewhat hypothetical situations or environments and such studies are prone to error or bias (Mitchell & Carson 1989). This is particularly true in cases like this where cost or tax information is provided. One of the reasons is that some people are prepared to disagree with the notion of higher payment in principle and may not make the effort to absorb and consider the contents of messages. Respondents may engage in strategic behavior which influences the outcome of the study (Mitchell & Carson 1989). They may infer the purpose of the study is to investigate willingness to pay, and recognize its possible implication may be subsequent price increases. Thus, respondents may report low willingness to pay, because they do not want to pay higher prices and believe that low responses will influence the pricing decision in their favor.

The distribution of per person prices that respondents at each of the four categories of differentially priced parks reported they were willing to pay offers some support for this interpretation. Table 13 shows that between 5.3% and 6.7% of respondents at each park price level indicated a willingness to pay a per person price of $0. Further 21.5% and 12.5% of respondents at the $5 and $6 parks, respectively, reported a willingness to pay a per person price of $1 or less. These responses are unlikely to reflect respondents' expected utility.

TABLE 13

The Distribution of Per Person Prices that Respondents from the Four Differentially Priced Parks Reported they were Willing to Pay

Per Person Amounts Respondents Stated They Were Willing To Pay ($)	Current Per Vehicle Admission Price			
	$3 n = 282	$4 n = 373	$5 n = 939	$6 n = 152
0	6.7%	6.2%	6.0%	5.3%
.01-1	42.2	35.7	21.5	12.5
1.01-2	35.4	37.8	36.5	31.6
2.01-3	10.2	17.3	26.5	25.6
3.01-4	1.8	2.9	3.5	11.8
4.01-5	2.5	4.3	5.4	11.2
> 5	1.2	.8	.6	2.0

Also, there were some respondents who were not excited about visiting state parks. Irrespective of the message, these individuals would be expected to report a low willingness to pay. Thus, in this study, visitors reporting no intention of making any more day visits to state parks within the next 12 months comprised 7% at $3 parks; 8.2% at $4 parks; 4.2% at $5 parks; and 0.7% at $6 parks.

Second, confusion may have existed between the per-person and the per-vehicle pricing systems among respondents in data set #3. This study was conducted two years before the per-person pricing was implemented. Thus, visitors were not familiar with the per-person pricing structure, so their willingness to pay expectation may have been too vague to be meaningful. In addition, there was probably some confusion between the two terms. Again, the distribution in Table 13 offers some support for this interpretation. For example, it seems unlikely that 5.5% of those at the $3 parks would be prepared to pay a price of $3 or more per person, or that 5.1% of those at the $4 parks would be prepared to pay $4 or more per person. It seems possible that these individuals did not read the question carefully and believed they were responding to the per vehicle rather than the per person unit of analysis.

If the guiding criterion in determining the per person amount that individuals were willing to pay was that there should be no personal economic loss, then responses were likely to be influenced by group size. Thus, an individual visiting a park alone at which the vehicular admission price was $5 presumably would be prepared to pay a per person price of $5. However, if there were two adults in the party, the no personal economic loss criterion would result in a per person price of $2.50, while if there were four adults their willingness to pay would be $1.25. A limitation of the study is that the group size variable was not included on the data collection instruments. Its availability would have aided interpretation of the results.

In the current financial environment where service demands exceed public funding, many managers are forced to develop effective pricing strategies in pursuit of revenue to offset deficits. While the analyses from data set 3 were inconclusive, those from data sets 1 and 2 added to the growing literature confirming the positive impact of cost of service information on raising willingness to pay. In addition to providing that information, they also offered some evidence supporting the effectiveness of messages to users which suggest that price increases are needed to forestall reductions in services or to avoid having a service be cross-subsidized by visitors at other parks.

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