Historic Landmark Pricing:
Implications for Community Development

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1. Introduction

Many rural communities rely on tourist spending as a source of basic employment and income. Much of this spending is the result of tourist activities at outdoor recreational facilities; however, historical landmarks located in nonmetropolitan areas are also an attraction to tourists and a source of income.[1] Cities with Revolutionary or Civil War landmarks *(e.g.,* Vicksburg, MS, and Gettysburg, PA), early settlements *(e.g.,* St. Augustine, FL, New Harmony, IN, and Taos, NM), infamous mining towns *(e.g.,* Tombstone, AZ, and Cripple Creek, CO), and birthplaces or residences of famous people *(e.g.,* Hannibal, MO, and Charlottesville, VA) have developed substantial tourist trades as a result of their historical significance.

Local and state governments have helped to stimulate the development of tourism in these areas by: 1) preserving historical sites, 2) encouraging arts- and crafts- oriented businesses to locate in these communities, 3) periodically staging celebrations or the reenactments of historical events, and 4) financing specific project developments designed to attract tourists on the basis of historical interest.

Obviously, not all communities were bequeathed the rich heritage of a Gettysburg or Cripple Creek; however, many nonmetropolitan areas do contain historical landmarks and have promoted these sites in an effort to attract tourists to the community. If the promotional efforts are successful, tourism levels will increase and tourist dollars will be distributed among the local merchants (primarily the restaurants, hotels, and gift shops). The merchants then allocate a portion of their revenue to their employees, landlords, and suppliers and the multiplier process continues. Thus a landmark may serve as a basic industry which directly and indirectly generates employment opportunities and income for the community (refer to Ayer and Layton (1), Diamond (3), Kalter and Lord (5), Kemper (6), Peck and Lepie (7), and Willis (8) for assessments of the potential tourism has for regional development).

The admission fees levied at these landmarks may have an effect on tourist levels and expenditures. Clawson and Knetsch (2, p. 246) noted, with respect to outdoor recreational areas,

> Entrance fees are another factor that should be considered in attempts to estimate the effects of a recreation develoment on the local economy. . . . The interests of persons and firms providing goods and services to recreationists is best served by low entrance fees, for these produce the greatest volume of business.

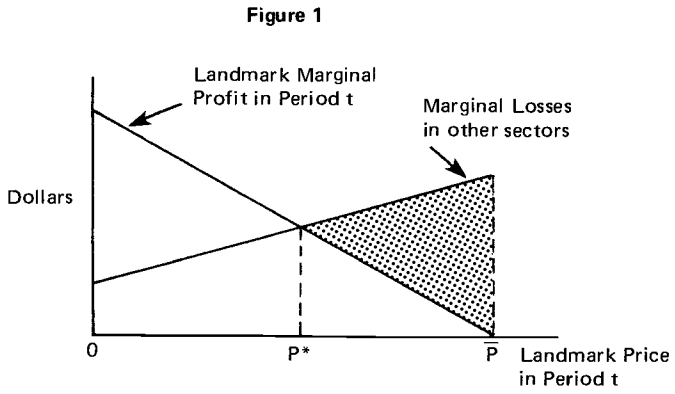
The purpose of this study is to determine if current tourist spending or future tourist levels in a community (Bisbee, AZ) are also sensitive to the entrance fees charged at a local historical landmark. Moreover, if tourist spending and landmark admission fees are related, which sectors of the Bisbee economy (restaurants, gift shops, or hotels) will benefit most from low entrance fees? The remainder of this report is organized as follows. First, the theoretical foundations of the landmark prices/tourist expenditure relationship are presented. A graphical analysis is provided in Section 2 and the mathematical counterpart to this model is contained in Appendix 1. Second, a description of the study area (Queen Mine Tour in Bisbee), data sources and survey methodology are presented. Third, the findings of the statistical analysis are provided and interpreted. Finally, the paper concludes with a discussion of the policy implications suggested by the estimation results.

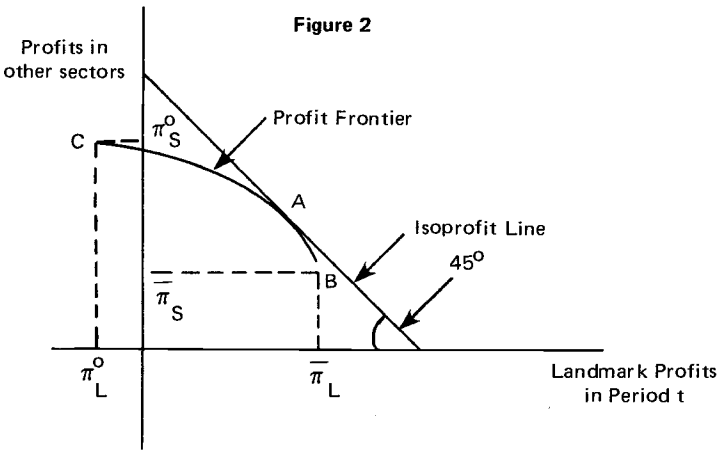
2. Landmark Prices & Tourist Expenditures: Theoretical Foundations

Frequently, entrance fees at historical landmarks have been selected according to the specific goals *(e.g.,* profit maximization, revenue or sales maximization subject to a target profit level, cost covering, congestion alleviation, or public education) and time preferences of the owners with little regard to their developmental consequences. Implicit in traditional pricing strategies is the assumption that tourist spending in the community is not a function of landmark prices or that the landmark owners simply are not concerned about the repercussions of their decisions on other sectors of the economy. However, should the landmark be public owned and should management's objective be to encourage tourism and community development, then the impact of admission fees on tourist spending must enter into the pricing decision.

Efficiency Implications of Landmark Pricing

If the levels of tourist activities are not related to the landmark's price, tourist spending in the community, and therefore area development, will be maximized by selecting an entrance fee that maximizes the landmark's profit. However, should tourist expenditures for food, lodging and souvenirs be negatively correlated to the entrance fee, the fee that maximizes total tourist spending in the community may be less than the profit maximizing price. This hypothetical relationship is illustrated graphically in Figures 1 and 2. As attendance at the historical landmark in the current period declines due to increasing the associated fee, it is assumed that profits in other sectors of the rural economy fall. Other sectors experience losses in two ways: 1) in the current period, expenditures on





Figures 1 and 2. Efficiency and distributive implications of landmark pricing.

other community goods and services are reduced as more of tourists' limited funds are channeled into touring activities or tourists are discouraged from spending as much time in the community, and 2) future tourist expenditures are reduced as the number and strength of recommendations to other potential visitors decline in response to less consumer surplus being realized by current tour participants. For expository convenience, losses incurred by other sectors in the current period will be referred to as the "consumption effect" of raising the landmark attendance price while losses incurred by sectors of the rural economy in the future will be referred to as the "investment effect" of raising the price.

The tradeoff faced by the community in determining an optimal landmark price in the current period is illustrated in Figure 1. Increasing the price to the profit-maximizing level ($\bar{P}$) adds net revenue to the community given by the area under the landmark marginal profit curve. At the same time, raising the price imposes losses in profit to the community through both consumption and investment effects. Total losses are given by the area under the "marginal losses in other sectors" schedule. From an efficiency point of view (maximizing net benefits to the community), the fee charged at the historical landmark should be reduced until the marginal loss incurred in the current period by the landmark operation is exactly offset by the marginal gains realized by other sectors of the economy, now and in the future. This occurs at a price of $P^* < \bar{P}$ with total community profits increasing by the shaded area in Figure 1.[2]

The interdependences of landmark profits and profits realized in other sectors of the economy, now and in the future, can be further illustrated through use of the profit frontier (see Figure 2). The profit frontier expresses profits in other sectors as a function of landmark profits, assuming that the price of landmark attendance can be varied between O and $\bar{P}$. Other sectors' profits are a strictly concave, decreasing function of profits at the landmark when the marginal losses in other sectors (resulting from higher landmark admission fees) are constant or increasing. Assuming that landmark profits are $\bar{\pi}_L$ and π^O_L when the admission fee is $\bar{P}$ and O respectively and that profits in other affected sectors are $\bar{\pi}_S$ and π^O_S at these prices, the profit frontier is given by BAC in Figure 2.

Any point on the profit frontier is an attainable combination of profits from the landmark operation and from other sectors. The most efficient combination of profits *(i.e.,* the combination which maximizes the sum of profits) is identified by determining the point of tangency between the profit frontier and an isoprofit line, a line showing combinations of profits from the landmark and other sectors that sum to a given constant. This tangency is illustrated by point A in Figure 2. Thus, efficient use of community resources requires that the current landmark price be reduced from the profit-maximizing level of $\bar{P}$ to P*, corresponding to a movement along the profit frontier from B to A. This readjustment requires a reduction in current landmark profits which are more than offset by increased net revenue in other sectors.

Distributive Implications of Landmark Pricing

As illustrated in Figure 2, changing the price imposed at the landmark results in a redistribution of net revenues between sectors of the economy. As the admission fee is reduced, profits fall in the landmark operation and rise in other sectors. A strict efficiency criterion would require that the sum of profits be made as large as possible with redistribution goals being reached through other programs *(i.e.,* taxation of one sector). In practice, community development will be concerned with both the level and distribution of profits in the various sectors of the economy. For example, if other sectors of the economy are labor intensive, a point to the right of A on the profit frontier may be preferred on employment grounds.

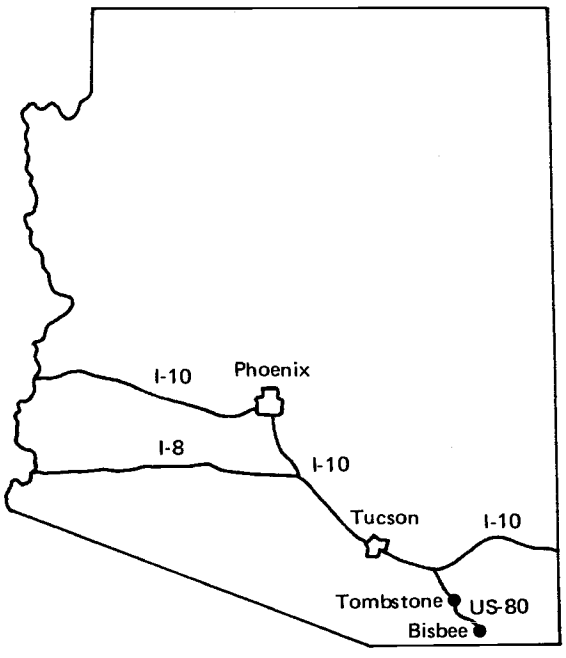
For purposes of this study, it is sufficient to point out that landmark pricing policies can reflect both economic efficiency and distributive equity goals by setting admission fees so that the appropriate point on the profit frontier is attained. The central concern of the following analysis is determining whether a significant trade-off between landmark profits and profits in other sectors exists and the associated implications for pricing policy.

3. Study Area, Data Sources, and Methodology

Bisbee and the Queen Mine Tour

In order to investigate the synergistic effects of historical landmark pricing, willingness to pay and expenditure data were collected from Bisbee tourists during the summer of 1980. Bisbee is a picturesque old mining town (see Figure 3) whose history dates back to the late 1870s when deposits of silver and copper were discovered by Fort Huachuca soldiers. These soldiers dealt their claim to prospector George Warren who in turn lost his holdings on a Fourth of July bet involving a footrace between himself and a horse with a rider. The lost claim eventually proved out to be worth more than 40 million dollars. Bisbee grew rapidly around the copper mines and during its "Golden Era" of the early 1900s had a population in excess of 30,000. In 1975, when the Phelps Dodge Corporation ceased mining copper in the area, Bisbee lost its industrial base, and by 1980 the town's population had declined to a little over 7,000. In response to the changing economic climate, Bisbee followed the example of other mining communities and initiated a tourism promotion effort. A publicly operated mining museum, city bus tour, open pit mine tour (Lavender Pit), and underground mine tour (Queen Mine) were provided; bicycle races and poetry readings were sponsored; and arts and crafts shops were encouraged. By 1981, 7% of Bisbee's total employment (115 FTE) were supported by tourism (Dunn, *et al.* (4)).

The Queen Mine (QM) in Bisbee was selected as the historical site for this study because: 1) the QM has a rich history dating back to the 1880s, 2) it is the principal publicly owned attraction in the city, 3) a tour of the Queen Mine (QMT) was initiated with funding from the Economic Development Administration with the purpose of assisting the local economy, 4) congestion costs need not be considered in the pricing decision because the number of participants on a tour is limited by railcar capacity to 32, and 5) the tour lasts approximately one hour and, therefore, represents a substantial investment in time by the tourists. The Queen Mine Tour is promoted by Bisbee (on billboards and in newspapers) and has been a very popular attraction. Approximately 20,000 visitors tour the Queen Mine each year and 21% of the tourists interviewed for this study stated that they would not have visited Bisbee if the QMT were not available.



Tucson to Bisbee:	94 miles
Tombstone to Bisbee:	24 miles
I-10 to Bisbee:	50 miles
Tucson to Phoenix:	112 miles

Figure 3. Map of Arizona.

Survey Methodology

Utilizing a two-stage surveying technique, willingness to pay and expenditure data were collected from Bisbee tourists during the summer of 1980. In stage one, Bisbee tourists were interviewed to determine their maximum willingness to pay for the tour, source and extent of prior knowledge of Bisbee and the surrounding area, hometown, trip origin and destination and socio-economic characteristics. Stage two consisted of a questionnaire that the interviewees were asked to complete and mail at the end of the Bisbee portion of their trip. The written questionnaire requested information concerning the tourists' activities while in Bisbee (length of stay and tours attended), expenditure patterns (amount spent for lodging, food and drink, souvenirs and crafts and tours) and the tourists' willingness to return to Bisbee or recommend Bisbee to their family and friends. Copies of the questionnaires are provided in Appendix 2.

In total, 237 "families" (persons touring together) were interviewed. Of these, 138 returned usable mailback questionnaires. Since 80% of Bisbee's tourists also visit Tombstone, the characteristics of tourists in the Bisbee sample were compared with those identified in an extensive survey of Tombstone tourists (refer to Wallas, *et al.* (8)). The Bisbee sample was found to be representative of visitors to the Bisbee-Tombstone area.

Willingness to Pay for the Queen Mine Tour

To ascertain how sensitive historical landmark attendance and revenue were to changes in admission fees, a demand function for the Queen Mine Tour was estimated using the willingness to pay (WTP) method. This approach involved interviewing tourists at the center of historic Bisbee, the Lavender Pit and the entrance to the Queen Mine Tour. Half of the respondents were asked if they would attend the QMT if the price were $1. ($.50 for children). If they answered yes, the price was raised by $.50 increments until their maximum willingness to pay was determined. Alternatively, the remaining 50% of the

interviewed tourists were quoted a price of $8. for the tour ($4. for children) and then the fee was lowered by $.50 increments until an affirmative response was attained.

Four potential problems are inherent in the willingness-to-pay method:

- **First**, a downward or upward bias on willingness to pay for the tour can be created either through the interviewer or interviewee. The tone of the interviewer, his or her method of presentation or length of the questionnaire may influence the interviewee's response. The potential patron's response may be affected by the initial price stated or a desire to terminate the interview. To minimize these problems, the interviewer stated prices to potential customers, and asked for a positive or negative response as to whether they would attend. As noted above, the interviewer alternated between stating a high admission fee and proceeding to lower prices, and stating a price of one dollar per person and proceeding to higher prices (in $.50 intervals). After obtaining data related to the interviewee's personal characteristics, the interviewer would restate for verification the maximum willingness to pay indicated. The total time of the interview was approximately four minutes. Therefore, time to complete the questionnaire is not expected to bias a customer's response.

- **Second**, patrons may demonstrate a downward bias when stating their willingness to pay for the tour since they may expect the future price to be affected by their response. However, historic landmarks, such as the Queen Mine Tour, rarely have repeat patrons. Therefore, a tour visitor's concern with future prices should have minimum impact on the consumer's response.

- **Third**, a patron may be biased toward the existing landmark price or prices of similar goods. Because few customers are expected to attend the tour more than once, it was expected that previous knowledge of prices would not be a major factor. However, potential customers were often able to determine the price prior to the interview, such that a bias toward that price could occur. To control for this type of bias, mine tour interviewees were asked to state whether they were aware of the price prior to the interview.

- **Finally**, willingness to pay a given amount is specific to the point in time at which the interview takes place. Changing prices of substitute and complementary activities may alter this relationship. It is difficult to to correct for these possible effects, but this study attempted to determine the impact of current local substitution effects by surveying tourists on July 4 when local coaster races and drilling contests were occurring. In addition, the survey questioned respondents as to their willingness to pay for the competing open pit mine tour and attempted to measure the effect of offering the pit mine tour free upon willingness to pay for the Queen Mine Tour.

Statistical Tests for Consumption and Investment Effects

The theoretical model in Section 2 suggests that if current tourist consumption, future landmark attendance or future tourist spending are sensitive to current landmark prices and attendance, net benefits to the community may be increased by lowering entrance fees and increasing tour attendance. To determine the extent to which landmark prices (through landmark attendance) generate synergistic effects, ordinary least square (OLS) regression and multivariate probit analysis were utilized. Current tourist consumption was divided into expenditures for food and drink, souvenirs and crafts, and lodging. Future tourist expenditures at the landmark and in the community were proxied by the tourists' willingness to recommend Bisbee to their friends and relatives and their willingness to return to Bisbee at a later date. Specifically, the following functional relationships were tested:

A. Consumption Effects.

Regression 1a

EXF = f(QMT,Y,AD,CH,LOC,J4,WD,LS,MM,ED)

Regression 1b

EXC = f(QMT,Y,AD,CH,LOC,J4,WD,LS,MM,ED)

Probit 2

LDG = f(QMT,CH,LOC,Y)

B. Investment Effects

Probit 3a

REC = f(QMT,CH,LOC,FT,Y,EXT)

Probit 3b

RET = f(QMT,CH,LOC,FT,Y,EXT)

where:

QMT = attended the Queen Mine Tour (1 for yes, 0 for no)
P = price of the Queen Mine Tour (maximum WTP stated)
EXF = expenditures per group for food and drink
EXC = expenditures per group for crafts and souvenirs
EXT = total expenditures per group net landmark entrance fees
LDG = lodged in Bisbee (1 for yes, 0 for no)
REC = definitely recommend Bisbee to friends and relatives (1 for yes, 0 for no)
RET = definitely return to Bisbeee (1 for yes, 0 for no)
Y = family income
AD = number of adults in group
CH = number of children in group
LOC = Southern Arizona resident (1 for yes, 0 for no)
J4 = July 4th weekend visit (1 for yes, 0 for no)
WD = weekday visit (1 for yes, 0 for no)
LS = length of stay in Bisbee (hours)
MM = attended the Mining Museum (1 for yes, 0 for no)
ED = education of household head
FT = tourists' first trip to Bisbee (1 for yes, 0 for no)

and QMT, LDG, REC, RET, LOC, J4, WD, MM and FT are all dummy variables. If

$$\frac{\partial EXF}{\partial QMT}, \frac{\partial EXC}{\partial QMT}, \frac{\partial LDG}{\partial QMT}, \frac{\partial REC}{\partial QMT} \text{ or } \frac{\partial RET}{\partial QMT} > 0 \text{ and}$$

$$\frac{\partial QMT}{\partial P} < 0,$$

then current and future tourist trade are sensitive to landmark prices and community development may be enhanced by selecting an entrance fee less than the price that maximizes profit for the tour along.

4. Results

Characteristics of Bisbee Tourists

Bisbee's tourists were generally well educated individuals, 62% of whom had family incomes in excess of $20,000 (Tables 1 and 2). Almost half of the tourists (48%) interviewed were from outside Arizona (Table 3). Of the in-state visitors, 46% listed Tucson as their hometown and 21% resided in parts of southeastern Arizona other than Tucson. As expected, the origins and destinations of Bisbee's tourists were much less dispersed than the visitors' hometowns. For the same day as the interview, Tucson was given as the trip origin or destination for 42% and 37% of Bisbee's visitors, respectively. Alternatively, southeastern Arizona (including Bisbee) was the origin or destination for 43% and 52% of the trips respectively (refer to Table 4). Thus, while close to half of Bisbee's tourists were from out-of-state, 85% of the visitors were already in Tucson or southeastern Arizona for other purposes the day of their visits to Bisbee.[3]

Table 1
Educational Characteristics of Interviewed Bisbee Tourists Household Heads, Summer 1980.

Educational Level	Percent of Bisbee Tourists
Less than H.S. Degress	2%
H.S. Graduate	33
Some College	21
College Graduate	31
Some Post Graduate Work	7
Doctorate Degree	6

Table 2
Total Household Income of Interviewed Bisbee Tourists, Summer 1980

Family Income Classes	Percent of Bisbee Tourists Within Income Classes
$ 0 - 10,000	13%
10,001 - 20,000	25
20,001 - 30,000	35
30,001 - 40,000	14
40,001 +	13

Table 3
Hometowns and Trip Origins and Destinations of Interviewed Bisbee Visitors, Summer 1980 [a]

Location	Hometowns	Percent of Visitors Whose Trip Originated in the Location Listed	Percent of Visitors Whose Trip Was Destined for Location Listed
Tucson, AZ	24%	42%	37%
Southeast Arizona	11	43	52
Out-of-State	48	7	6
Rest of Arizona	17	8	5
Total	100%	100%	100%

[a]The origins and destinations refer only to the day of the Bisbee trip.

Demand for the Queen Mine Tour

The maximum willingness-to-pay (WTP) responses of the interviewed Bisbee tourists and the revenue generated at the QMT for each WTP level are provided in Table 4. The revenue maximizing price for the summer of 1980 was $3.50. A price below $3.50 would have resulted in increased traffic, but only to a small degree and at the expense of QMT revenue. Above $3.50, the demand for the QMT was very elastic, *i.e.*, both the number of patrons and total revenue fell rapidly with every $.50 increment in the admission fee. Therefore, attendance at the historical landmark was sensitive to changes in the price and tourist spending at the landmark was maximized at a relatively low fee of $3.50. Whether $3.50 is also the price that maximized tourist spending in the community will depend upon the existence of "consumption" or "investment" effects generated by tour attendance.

Consumption Effects

On the average, day visitors who attended the QMT remained in Bisbee longer (net of the time spent on the tour) and reported greater expenditures for food and drink and crafts and souvenirs than those day tourists not electing to visit the landmark (Tables 5 and 6). However, the differences in tourists expenditure patterns may have resulted from differences in tourist characteristics other than QMT attendance *(e.g.,* family size, income, distance traveled, or day of visit). To isolate the impacts of QMT attendance on tourist spending and the propensity to lodge in Bisbee, the regression and probit equations of Section 2 were utilized.

Results of the regression analysis (Table 7) provide only mixed support for the contention that landmark attendance influences current tourist expenditures for food and

Table 4
Maximum Willingness to Pay of Interviewed Tourists and Total Landmark Revenue Generated at Each Willingness to Pay Level[a]

Maximum Willingness To Pay (WTP)	Number of Tourists in WTP Cell[b]	Cumulative Number of Tourists	Total Revenue at QMT
$8.00 and more	10.0	10.0	$ 80.00
7.50	8.5	18.5	138.75
7.00	12.0	30.5	213.50
6.50	0.0	30.5	198.25
6.00	27.5	58.0	348.00
5.50	4.0	62.0	341.00
5.00	100.5	162.5	812.50
4.50	38.0	200.5	902.25
4.00	116.5	317.0	1268.00
3.50	72.0	389.0	1361.50
3.00	4.0	393.0	1179.00
2.50	11.0	404.0	1010.00
2.00 and less	11.0	415.0	830.00

[a]Only those tourists unaware of the price were included.
[b]Children under 12 years of age are counted as one-half.

crafts. Participation on the QMT had no significant effect on souvenir and craft expenditures. Spending on food and drink by QMT visitors was approximately $7.50 higher per "family" than the restaurant and bar expenditures of those tourists that did not attend the landmark, however, the coefficient of the QMT variable was significant only at the 10% level. Both food and drink and souvenir expenditures were positively and significantly related to length of stay in Bisbee, and landmark visitors (day visitors and lodgers) did remain in Bisbee an average of 2.6 hours (net

Table 5
Length of Stay in Bisbee by Interviewed Tourists
Summer 1980

Hours	Attended QMT	Did Not Attend QMT
0 - 1 hr., 30 min.	3%	44%
1 hr., 31 min. - 3 hr.	31	32
3 hr., 1 min. - 4 hr., 30 min.	24	0
4 hr., 30 min. - 6 hr.	11	8
6 hr., 1 min. - 12 hr.	3	0
Overnight	27	16
Mean Length of Stay of Day Visitors	3 hrs., 48 min.	1 hr., 51 min.
Mean Length of Stay Day Visitors Net Tour Time (Approximately 1 hr.)	2 hrs., 48 min.	1 hr., 51 min.

Table 6
Mean Expenditure Levels for Interviewed Bisbee Tourists
Summer 1980

Tourists' Characteristics	Expenditure Category: Lodging	Food and Drink	Crafts and Sourvenirs	Other, Excluding Tours
Day Visitors Only				
Attended QMT	—	$10.09	$3.19	$ .64
Did Not Attend QMT	—	4.24	.48	.71
Lodgers				
Attended QMT	33.87	37.44	3.12	4.63
Did Not Attend QMT	22.50	40.25	0.00	0.00

Table 7
Regression Results for Tourists Expenditures
Food and Drink, Souvenirs and Crafts[a]

Regression 1a Expenditures for Food and Drink			Regression 1b Expenditures for Souvenirs and Crafts		
Independent Variable	Coefficient	t-Statistic	Independent Variable	Coefficient	t-Statistic
QMT[a]	7.58	1.62*	QMT[a]	3.91	.30
Y	.0004	2.93***	Y	.0005	1.14
AD	− 1.15	.72	AD	.35	.08
CH	.40	.23	CH	5.76	1.17
LOC[a]	10.11	2.63***	LOC[a]	10.31	.96
J4[a]	− 3.72	.56	J4[a]	14.43	.77
WD[a]	− 3.46	.81	WD[a]	15.93	1.34*
LS	.50	6.51***	LS	.32	1.52*
MM[a]	− 2.21	.59	MM[a]	− 2.56	.24
ED	.27	.41	ED	.25	.14
Intercept	− 5.68	.54	Intercept	−26.07	.89
R^2 = .41 F = 7.20***			R^2 = .09 F = 1.01		

a = dummy variable
* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

[a]All variables and coefficients are in linear form.

of tour time) longer than other tourists. Yet, crediting the entire marginal change in the length of stay to tour attendance will increase food and crafts expenditures by only $1.30 and $.85 respectively for each "family" that elected to visit the QMT.

To determine if the decision to lodge in Bisbee was related to QMT attendance, a binary-choice modeling approach (probit) was adopted. The probit results of Table 8 indicate that there existed a positive and significant relationship between tour attendance and lodging. However, since participating on the QMT may have encouraged tourists to seek lodging, and staying overnight provided tourists with additional time to visit the local attractions, no direction of causation may be inferred from the probit results.[4] Further analysis of the survey data provided support for the "decide to lodge then elect to visit the land-

Table 8
Probit Results for Lodging in Bisbee[a]

Probit 2a Lodging as a Function of QMT			Probit 2b QMT as a Function of Lodging		
Independent Variable	Coefficient	t−Statistic	Independent Variable	Coefficient	t−Statistic
QMT[a]	.70	2.36***	LDG[a]	.69	2.24**
LOC[a]	−.66	−2.43***	LOC[a]	−.04	− .18
CH	−.21	−1.42*	CH	.01	.06
Y	.01	.12	Y	.27	2.45***
Intercept	−.79	−1.87**	Intercept	−.60	− 1.63*
Log Likelihood Estimate = −58.63 χ^2 = 62.96			Log Likelihood Estimate = −82.29 χ^2 = 15.63		

a = dummy variable
* = significan at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

[a]All variables and coefficients are in linear form.

mark" chain of causation. No tourists stated prior to visiting the QMT that they would not be spending the night in Bisbee and then changed their minds after participating on the tour. Furthermore, no tourists stated that they would be lodging in Bisbee and then elected to lodge elsewhere if they did not visit the landmark. Thus, while the existence of the landmark may have encouraged tourists to visit and lodge in Bisbee, no data have been found to support the hypothesis that the lodging decision was a function of landmark attendance.[5]

Investment Effects

Approximately 75% of the tourists interviewed were either return visitors to Bisbee or first learned about Bisbee from friends or relatives. Thus, the willingness of interviewees to recommend or return to Bisbee was used as a proxy for future demand at tourist related businesses and the QMT. On the mailback questionnaire, tourists were asked if they would:

1. Definitely recommend Bisbee to family and friends.
2. Probably recommend Bisbee to family and friends.
3. Probably not recommend Bisbee to family and friends.
4. Definitely not recommend Bisbee to family and friends.

and

1. Definitely return to Bisbee.
2. Probably return to Bisbee.
3. Probably not return to Bisbee.
4. Definitely not return to Bisbee.

Overall, the interviewees' reactions to Bisbee were quite favorable (Table 9). Ninety-eight percent of the recommend Bisbee responses were either definitely or probably recommend, and 77% of the tourists stated that they would definitely or probably return.[6] Only one group stated that it definitely would not return to or recommend Bisbee. Therefore, probit analysis was adopted to ascertain if the tourists' decisions to definitely recommend *versus* probably recommend or definitely return *versus* probably return were influenced by QMT attendance.

Table 9
Visitors' Willingness to Recommend or Return to Bisbee

Response	Will You Make A Return Trip to Bisbee?	Will You Recommend Bisbee to Friends and Relatives?
Definitely Yes	33%	64%
Probably Yes	44%	34%
Probably Not	22%[a]	1%
Definitely Not	1%	1%
TOTAL	100%	100%

[a]Most of those visitors who expressed a reluctance to return resided long distances from Bisbee.

The probit results of Table 10 indicate that the landmark visitors were neither more nor less likely to definitely

Table 10
Probit Results for Tourists Willingness to Recommend or Return[a]

Probit 3a

Recommend Bisbee to Family and Friends

Independent Variable	Coefficient	t–Statistic
QMT[a]	.21	.56
CH	−1.63	−1.15
LOC[a]	.45	1.32*
FT[a]	.15	− .46
Y	− .01	− .01
EXT	8.60	2.02**
Intercept	− .34	− .53

Log Likelihood Estimate = − 52.54
χ^2 = 12.75

Probit 3b

Return to Bisbee in the Future

Independent Variable	Coefficient	t–Statistic
QMT[a]	− .18	− .41
CH	−3.69	−2.43***
LOC[a]	.74	2.11**
FT[a]	− .37	− .90
Y	.21	1.24
EXT	.59	1.00
Intercept	.50	.98

Log Likelihood Estimate = − 53.91
χ^2 = 10.01

a = dummy variable
* = significant at the .10 level
** = significant at the .05 level
*** = significant at the .01 level

[a]All variables and coefficients are in linear form.

recommend or definitely return to Bisbee than other tourists. However, willingness to recommend and return were significantly related to location of residence and number of children in the group. In-state tourists, as anticipated, were more inclined to provide definitely recommend and definitely return responses. Willingness to recommend and willingness to return were negatively and significantly related to the number of children in the family. These inverse relationships were also anticipated because Bisbee is very hilly and not an easy place to visit with small children.

5. Summary

The existence of historical landmarks may be beneficial to local economies. As noted earlier, approximately 20,000 visitors a year have taken the Queen Mine Tour, and 21% of those tourists interviewed stated that they would not have visited Bisbee if the QMT were not available. Furthermore, attendance at the QMT was sensitive to the entrance fee selected. Among those tourists who were making their first trip to Bisbee and who were unaware of the landmark entrance fee, the demand was price elastic above an admission fee of $3.50. The price elasticity of demand for historical landmark visits will of course be affected by the number of substitutes in the area. In and near Bisbee, many other activities could be substituted for a trip to the QM *(e.g.,* Bisbee Mining Museum, local arts and crafts shops; Tombstone, AZ; Lavender Pit). Therefore, landmark managers should note that even if "consumption" and "investment" effects are not present, a relatively low entrance fee may still maximize tourist spending in the community (landmark and tourist sectors) if the landmark demand is highly price elastic.

Day visitors who attended the Queen Mine Tour remained in Bisbee approximately one hour (net of tour time) longer than those tourists not electing to visit the landmark. Thus providing reasonably priced activities may be helpful in encouraging tourists to extend their visits to the community. Moreover, as a result of longer visits or arranging their schedules to include tours of the Queen Mine, tourists who visited the landmark also spent significantly more for food and drink than other Bisbee visitors. Therefore, low admission fees to historical landmarks may be beneficial to the restaurant and bar sectors of the local economy. However, no data were found to support the hypothesis that the entrance fee charged at the landmark, through landmark attendance, influenced tourist spending for crafts and souvenirs or the propensity to lodge.

Participation in the landmark tour did not result in a higher probability of recommending Bisbee to friends and relatives or returning to Bisbee in the future. The lack of a significant relationship between tour attendance and recommendations or willingness to return may have resulted from: 1) the fact that the tourists' expenditures on the QMT constituted only a small portion of the total travel costs to Bisbee, or 2) the availability of substitute activities for Bisbee visitors. Thus, the managers of the QMT (and similar landmarks) may not need to consider the "investment" effects of their pricing decisions when selecting an admission fee.

Endnotes

1. The demand functions for historical landmarks differ from those of "traditional" recreational goods, such as park usage and water oriented recreation. First, a historical landmark is primarily a point-of-interest for which repeat visits by tourists are unusual. Second, there is generally less substitutability of sites for historical landmarks than for "normal" recreational activities. This lack of substitutability occurs because there is something unique about the landmark site which has made it historically significant. Alternatively, the necessary facilities for many forms of recreation (swimming, fishing, hiking) can be reproduced, albeit not exactly, at a variety of locations.
2. Included in the "other sectors of the economy" are the future gains and losses at the landmark resulting from current pricing decisions.
3. On the average, winter tourists to Bisbee are older, wealthier, and have smaller families than their summer counterparts.
4. The coefficients of the QMT and LDG variables in the LDG = f(QMT, . . .) and QMT = g(LDG, . . .) probit equations respectively were essentially identical (.70 *vs* .69). The data set was not extensive enough to permit the use of a causation technique such as the Granger method to statistically determine the true direction of causation.
5. The decision to lodge was primarily a function of the location of the tourists' hometowns. Those tourists who resided outside Southern Arizona exhibited a higher probability for spending the night in Bisbee than individuals who could more easily make the visit to Bisbee a "day trip".
6. Almost all of the tourists who stated that they would definitely not or probably not return to Bisbee lived thousands of miles from Arizona *(e.g.,* England, Germany, Baltimore, Miami and Boston).

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Appendix 1

A Two Sector-Two Period Mathematical Model of Landmark Pricing and Tourist Expenditures

The proposition that the optimal landmark attendance price is less than the profit maximizing price when landmark attendance generates external benefits in other sectors of the economy can be illustrated mathematically by the following two-sector/two-period model. Let Υ represent the discounted sum of current and future profits realized by the landmark and tourist businesses.

$$(1)\ \Upsilon = P^h_t \cdot Q^h_t(P^h_t) - C^h_t(Q^h_t(P^h_t))$$

$$+ P^s_t \cdot Q^s_t(P^s_t, P^h_t) - C^s_t(Q^s_t(P^s_t, P^h_t))$$

$$+ P^h_{t+1} \cdot Q^h_{t+1}(P^h_{t+1}, P^h_t) - C^h_{t+1}(Q^h_{t+1}(P^h_{t+1}, P^h_t))$$

$$+ P^s_{t+1} \cdot Q^s_{t+1}(P^s_{t+1}, P^h_{t+1}, P^h_t) - C^s_{t+1}(Q^s_{t+1}(P^s_{t+1}, P^h_{t+1}, P^h_t))$$

where P^h = historical landmark entrance fee
Q^h = historical landmark attendance
C^h = historical landmark operating costs
P^s = price of tourist related goods and services
Q^s = quantity of tourist related goods and services
C^s = cost of tourist related goods and services
t = current time period
$t+1$ = future time period

and all the future expenses and revenues are discounted. From a development perspective, the goal of the landmark managers would be to select a P_t and P_{t+1} such that Υ is maximized. First order conditions for profit maximization are:

$$(2)\ \frac{\partial \Upsilon}{\partial P^h_t} = Q^h_t + P^h_t \cdot \frac{\partial Q^h_t}{\partial P^h_t} - \frac{\partial C^h_t}{\partial Q^h_t} \cdot \frac{\partial Q^h_t}{\partial P^h_t}$$

$$+ P^s_t \cdot \frac{\partial Q^s_t}{\partial P^h_t} - \frac{\partial C^s_t}{\partial Q^s_t} \cdot \frac{\partial Q^s_t}{\partial P^h_t} + P^{h1}_{t+1} \cdot \frac{\partial Q^h_{t+1}}{\partial^h_t}$$

$$- \frac{\partial C^h_{t+1}}{\partial Q^h_{t+1}} \cdot \frac{\partial Q^h_{t+1}}{\partial P^h_t} + P^s_{t+1} \cdot \frac{\partial Q^s_{t+1}}{\partial P^h_t}$$

$$- \frac{\partial C^s_{t+1}}{\partial Q^s_{t+1}} \cdot \frac{\partial Q^s_{t+1}}{\partial P^h_t} = 0$$

$$(3)\ \frac{\partial \Upsilon}{\partial P^h_{t+1}} = Q^h_{t+1} + P^h_{t+1} \cdot \frac{\partial Q^h_{t+1}}{\partial P^h_{t+1}}$$

$$- \frac{\partial C^h_{t+1}}{\partial Q^h_{t+1}} \cdot \frac{\partial Q^h_{t+1}}{\partial P^h_{t+1}} + P^s_{t+1} \cdot \frac{\partial Q^s_{t+1}}{\partial P^h_{t+1}}$$

$$- \frac{\partial C^s_{t+1}}{\partial Q^s_{t+1}} \cdot \frac{\partial Q^s_{t+1}}{\partial P^h_{t+1}} = 0$$

In the absence of any relationship between current landmark attendance and current or future tourist spending;

$$\frac{\partial Q^s_t}{\partial P^h_t} = 0, \quad \frac{\partial Q^s_{t+1}}{\partial P^h_t} = 0, \quad \text{and} \quad \frac{\partial Q^h_{t+1}}{\partial P^h_t} = 0 \cdot$$

Substituting into (2) and solving for P_t, the price that maximized the community's net revenue for period t is given by:

$$(4)\ P_t = \frac{\partial P^h_t}{\partial Q^h_t}\left[- Q^{h1}_t + \frac{\partial C^h_t}{\partial Q^h_t} \cdot \frac{\partial Q^h_t}{\partial P^h_t} \right]$$

Equation (4) represents the traditional result that price reflects net benefits at the margin. However, should synergistic effect exist *(i.e.;*

$$\frac{\partial Q_t^s}{\partial P_t^h} < 0, \quad \frac{\partial Q_{t+1}^s}{\partial P_t^h} < 0, \quad \text{and} \quad \frac{\partial Q_{t+1}^h}{\partial P_t^h} < 0)$$

the current net revenue maximizing price would be P_t':

$$(5) \quad P_t' = \frac{\partial P_t^h}{\partial Q_t^h} \left[- Q_t^{h1} + \frac{\partial C_t^h}{\partial Q_t^h} \cdot \frac{\partial Q^h}{\partial P_t^h} \right]$$

$$- \frac{\partial P_t^h}{\partial Q_t^h} \left[P_t^s \cdot \frac{\partial Q_t^s}{\partial P_t^h} - \frac{\partial C_t^s}{\partial Q_t^s} \cdot \frac{\partial Q_t^s}{\partial P_t^h} \right]$$

$$- \frac{\partial P_t^h}{\partial Q_t^h} \left[P_{t+1}^h \cdot \frac{\partial Q_{t+1}^h}{\partial P_t^h} - \frac{\partial C_{t+1}^h}{\partial Q_{t+1}^h} \cdot \frac{\partial Q_{t+1}^h}{\partial P_t^h} \right]$$

$$- \frac{\partial P_t^h}{\partial Q_t^h} \left[P_{t+1}^s \cdot \frac{\partial Q_{t+1}^s}{\partial P_t^h} - \frac{\partial C_{t+1}^s}{\partial Q_{t+1}^s} \cdot \frac{\partial Q_{t+1}^s}{\partial P_t^h} \right]$$

Letting π_t^h and π_{t+1}^h equal current and discounted future landmark profits respectively, and π_t^s and π_{t+1}^s equal current and discounted future profits at tourists related goods and services businesses respectively, equation (5) can be written as:

$$(6) \quad P_t' = P_t - \frac{\partial P_t^h}{\partial Q_t^h} \left[\frac{\partial \pi_t^s}{\partial P_t^h} + \frac{\partial \pi_{t+1}^h}{\partial P_t^h} + \frac{\partial \pi_{t+1}^s}{\partial P_t^h} \right]$$

where $\frac{\partial \pi t^s}{\partial P_t^{h1}}$ represents the "consumption effect" and

$\frac{\partial \pi_{t+1}^h}{\partial P_t^h}$ and $\frac{\partial \pi_{t+1}^s}{\partial P_t^h}$ the "investment effects" of current landmark pricing decisions.

If the Clawson and Knetsch observation regarding recreational area prices and tourist spending is valid for historical landmarks, then

$$\frac{\partial \pi_t^s}{\partial P_t^h}, \quad \frac{\partial \pi_{t+1}^h}{\partial P_t^h} \quad \text{and} \quad \frac{\partial \pi_{t+1}^s}{\partial P_t^h} < 0,$$

and the landmark entrance fee that maximizes the communities' net benefits from tourism (P_t') will be less than the fee that maximizes the landmarks profits (P_t).

Appendix 2

Bisbee Questionnaire
(to be given in person)

A. 1. Date _____

2. Time of Day
   morning _____
   noon _____
   afternoon _____

Name _____

3. Where is your hometown? _____
4. How many people are in your group? _____ Adult? _____ Children under 12? _____
5. How did you arrive in Bisbee?
   Bus _____
   Private Car _____
6. When did you arrive in Bisbee? _____
7. How long do you expect to stay in Bisbee? _____
8. Origin of today's trip _____
9. Destination of today's trip _____
10. Did you or will you stop in the Tombstone Historic District on this trip? _____
11. Is this your first trip to Bisbee? _____ (yes, no)
    Have you ever been on the Queen Mine Tour? _____
    Have you ever been on the Lavender Pit Tour? _____
12. Were you aware of the Queen Mine Tour before coming to Bisbee? _____
    Its price? _____
    Would you have come to Bisbee if the tour were not available? _____
    How did you become aware of the tour?
    Friends or relatives _____
    Billboards _____
    Magazine or Newspapers _____
    Other (specify) _____

13. Were you aware of the Lavender Pit Tour before coming to Bisbee? _____
    How did you become aware of the tour?
    Friends or relatives _____
    Billboards _____
    Magazine or Newspapers _____
    Other (specify) _____
14. Were you aware of the Bisbee Historical Mining Museum? _____
    Are you planning to visit it? _____

B. We have no influence over the pricing of this establishment. This study is to obtain tourist characteristics, activity patterns, and valuations for predictive purposes. As such, your answers will not be used to set prices. Please answer honestly.

Note: For the following questions, assume children under the age of 12 can participate at half-price.

The Queen Mine Tour takes approximately 60 minutes.
The Lavender Pit Tour takes approximately 90 minutes.

1. Are you willing to spend the time to go on both tours? _____
2. Are you aware of the price for the Queen Mine Tour? _____

(continued)

3. Are you aware of the price for the Lavender Pit Tour? _____
4. Assuming that the Lavender Pit Tour is free, would you go on the Queen Mine Tour if the adult fare were (0-.50-1.00--)? _____
5. Assuming that there were no Lavender Pit Tour, would you go on the Queen Mine Tour if the adult fare were (0-.50-1.00--)? _____
6. Assuming that the Queen Mine Tour were free, would you go on the Lavender Pit Tour if the adult fare were (0-.50-1.00--)? _____
7. Assuming that the Queen Mine Tour was closed, would you go on the Lavender Pit Tour if the adult fare were (0-.50-1.00--)? _____
8. Assume that the Queen Mine Tour and the Lavender Pit Tour are offered only in a joint tour package but you do not have to participate in both. Would you purchase tickets to this joint tour if the adult fare were (0-.50-1.00--)? _____

C. 1. What is your occupation? _____
2. What is your highest level of education? _____
3. How much does your group expect to spend in Bisbee for
   Lodging _____
   Food and Drink _____
   Crafts and Souvenirs _____
   Gasoline _____
   Other (if possible specify) _____
4. While this is personal it helps us in terms of a complete analysis and will be kept confidential. What was your total income in 1979? (Circle one)
   A. up to $10,000
   B. $10,001-20,000
   C. $20,001-30,000
   D. $30,001-40,000
   E. $40,001 +

Bisbee Questionnaire
(To be returned by mail)

City of Bisbee Tourism Questionnaire
c/o Agricultural Economics Department
University of Arizona
Tucson, Arizona 85721

Your assistance in promptly completing and mailing this questionnaire would be greatly appreciated. Please mail it as soon as possible, preferably prior to departing Bisbee.

1. Did you go on the Bisbee Bus Tour? Yes_____
   No_____
2. Did you go on the Queen Mine Tour? Yes_____
   No_____
3. Did you visit the Bisbee Historical Mining Museum? Yes_____
   No_____
4. How much time did you spend in Bisbee? (hours) _____
5. To the best of your knowledge, how much did your group spend in Bisbee for
   a. Lodging _____
   b. Food and Drink _____
   c. Souvenirs and Crafts _____
   d. Other (please specify) _____
6. Will you make a return trip to Bisbee?
   a. Definitely yes _____
   b. Probably yes _____

(Continued)

d. Probably not _____
e. Definitely not _____

7. Will you recommend Bisbee to your friends and relatives?
   a. Definitely yes _____
   b. Probably yes _____

   d. Probably not _____
   e. Definitely not _____