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USER FEES AT PROTECTED AREAS
IN COSTA RICA

by

Manuel J. Baldares C.
Jan G. Laaraman

FPEI Working Paper No. 48



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USER FEES AT PROTECTED AREAS IN COSTA RICA

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User fees raise revenue and distribute visitation through space and time for visitors to wildlands. Main policy issues are: (1) adequacy of the revenue generated in relation to the costs of collecting it, (2) political aspects of charging fees compared with alternative funding mechanisms, and (3) fairness of the fee structure, given varying abilities of different visitor segments to pay (Cordell 1984; Cullen 1985; Reiling and Anderson 1985; Bamford et al. 1988; Wilman 1988).

The second and third issues are particularly critical when a substantial proportion of visitation is by non-residents having higher incomes than residents. This is the case in Costa Rica, a Central American republic drawing heavy wildlands visitation from the USA, with secondary inflows from Canada and western Europe. Visitation statistics understate actual use, but in recent years Costa Rica's national parks and other protected reserves receive over 300 thousand visitor-days of annual use. This includes visitation by over 100 thousand foreigners (*gringos*), with the other two-thirds of visitation comprising Costa Rican nationals (*ticos*). Visitation increased 50 percent between 1986 and 1988, and more growth is almost a certainty. This reflects a current interest in "rainforest tourism" by *gringos* (Laarman and Durst 1987), and expanding awareness of national heritage by *ticos*.

Visitation to private nature reserves also is growing rapidly. A dramatic example is the Monteverde Cloud Forest Reserve, where the inflow of visitors increased from seven thousand in 1985 to seventeen thousand in 1989. Even greater increases are predicted in years ahead unless use should be restricted or rationed.

Management budgets have not kept up with visitor growth, especially in the public sector. Ironically, the recent inflow of foreign assistance to help establish new protected areas now exacerbates local funding burdens to protect and manage them in an era of generally declining budgets and manpower. Monetary inflation and austerity measures stemming from Costa Rica's post-1982 economic difficulties leave public agencies with declining resources. Personnel levels have fallen by 20 percent since 1979-1981. Operating funds for maintenance, fuel, travel, and equipment diminished from 27 percent of the regular budget in 1981 to only 9 percent in 1988. Yet the size of the country's system of protected areas more than doubled during this same interval (Barborak 1988).

This distressing fiscal predicament is offset somewhat by the fact that regular budgets of the National Parks Service and the Wildlife Service are supplemented by proprietary funds (the National Parks Fund and the Wildlife Fund). These funds are managed principally to cover operating costs, with salaries and wages for personnel continuing to be paid mainly from Costa Rica's central budget authority. The proprietary funds are raised from a number of fiscal stamps, donations, transfers from other agencies, and fees and charges for visitor services and concessions. Daily entrance fees account for over half of all annual income in the National Parks Fund, but the amount of the fee is only 25 colones (about US\$0.30). This modest fee represents an upward adjustment from even lower entrance charges a few years ago.

Of special significance for this study, *gringos* are charged the same fee as *ticos* for park admission. This policy persists, despite likely differences between nationals and foreigners in household income and willingness-to-pay. Legal advisers to the National Parks Service insist that Costa Rica's constitution prohibits charging foreigners more than nationals. This may or may not be equivalent in legal and administrative terms to charging non-residents more than residents. Legal and definitional issues aside, the budget crisis confronting the National Parks Service suggests that low entrance fees for *gringos* are inconsistent with revenue needs. Serious re-examination of fee policy begins by analyzing willingness-to-pay of both *gringos* and *ticos*.

The same need to understand willingness-to-pay pertains to the private sector. Extremely rapid growth of visitation in the Monteverde Reserve has led to deterioration of parts of the trail system. Besides funding needed for trail rehabilitation and maintenance, the reserve has additional financial needs to build a visitors' center and provide other infrastructure and services for its swelling number of guests. The Tropical Science Center, owner and manager of the reserve, must consider potentially higher entrance fees as one among few options to pay for investment. Moreover, elevation of entrance fees might be one means to slow annual visitation levels, although this is not openly presented as an objective.

A Study of Willingness to Pay Higher Fees

While knowledge of issues concerning wildlands user fees is fairly extensive in countries like the USA (Rosenthal et al. 1984), little is known about them in Latin America. Failure to address financial strategies is disturbing, since comparison of alternative funding mechanisms should rank prominently in discussions on paying for tropical conservation (McNeely 1988). In recent years, conservationists have suggested a steady stream of non-conventional sources of funding for tropical wildlands (MacKinnon et al. 1986). Yet in countries where visitation levels are moderate to high, a first priority is to learn more about the revenue potential of user fees.

In 1989, the National Parks Service of Costa Rica formed a working group to study the revision of entrance fees. Tasks were to re-examine the delicate matter of possible fee differentiation between *ticos* and *gringos*, to explore whether fees should vary between areas, and to determine whether some visitors should be exempt from fees or pay at a lower level. Possible exemption or reduction refers to young children, school groups, retired persons, and visitors who arrive as families. Still another question concerned possible fee differentiation by user category, e.g., a fee for researchers that would differ from a fee for recreationists.

Many such issues were addressed in preliminary fashion through a survey of visitors at three of Costa Rica's most heavily visited national parks: Poas, Manuel Antonio, and Cahuita. These three parks account for over three-fourths of total visitation in the protected area system. To provide comparison, the survey also included visitors at the private Monteverde reserve, where entrance fees were 240 colones, nearly ten times the fee at national parks.

During selected days in August through October, more than 860 visitors were surveyed (Figure 1). These days were allocated between weekends and weekdays in approximate proportion to the distribution of visitation. Upon exit from the park areas, visitors were asked by bilingual teams to complete a short written questionnaire (choice of Spanish or English, 21 questions). All visitors aged 17 and older were included. In families, the head of household or spouse was chosen to represent the family group. The survey teams encountered virtually no refusals to participate. When asked to help, the survey teams assisted respondents to understand the questions.

The subject of entrance fees was treated as follows: "For the type of visit you are making here, how much should be the normal entrance fee for Costa Ricans and others who live permanently in Costa Rica?" "And how much should be the normal entrance fee for visitors who come from outside of Costa Rica?" For both questions, the respondent selected from ten fee levels, ranging from no charge to 1,000 colones. These two questions in sequence permit evaluation of the fairness issue, highly important within Costa Rica's social context. *Ticos* are answering for themselves and in relation to *gringos*, just as *gringos* are answering for themselves and in relation to *ticos*

An alternative analytical framework, such as the travel cost model, was rejected because of contrasting elements in the travel of resident vs. non-resident visitors. Additionally, the direct approach of simply asking visitors about the entrance fee has virtues of simplicity and transparency, essential for ultimate acceptance by policymakers.

The willingness-to-pay higher fees to enter Costa Rica's protected areas was postulated to vary by:

- *RESIDENT (resident or non-resident of Costa Rica),
- *AREA (between different protected areas),
- *FAMILY (no. of family members entering together),
- *REASON (main purpose of the visit),
- *STAY (length of stay in total number of days),
- QUALITY (perceived satisfaction)
- EXPERIENCE (no. of previous visits or other experience factors),
- INCOME, EDUCATION, AGE, SEX (control variables).

The variables with asterisks (*) are the principal policy variables, since fee structure can be adjusted up or down in relation to them. All other variables are less capable of being manipulated for purposes of setting entrance fees.

Findings.

RESIDENCE.--The effects of residence can be appreciated in Figures 2 and 3 for the national parks and the private reserve, respectively. The data support two principal observations: (1) resident and non-resident visitors agree that residents should pay less than non-residents, and (2) residents favor higher fees than non-residents. Since most resident visitors are *ticos* and most non-resident visitors are *gringos* (Figure 4), we continue to employ that abbreviated if imperfect terminology.

The first finding was anticipated, and is derived by comparing upper and lower panels in each figure. In Figure 2, fees higher than 25 colones for *ticos* are favored by 47 percent of *ticos* and 34 percent of *gringos* (upper panel). Regarding fees for *gringos*, these proportions rise to 77 percent of *ticos* and 65 percent of *gringos* (lower panel). Likewise, Figure 3 indicates that most visitors to Monteverde favor fees of less than 200 colones for *ticos* (upper panel), but few indicate fees less than 200 colones for *gringos* (lower panel).

Another way to understand this is through Table 1, referring to responses in the four areas together. Some 56 percent of respondents marked lower fees for *ticos* than for *gringos*, while 41 percent showed fee equality. Only 3 percent thought that *ticos* should pay more than *gringos*.

In Figure 2, solid bars are taller than dotted bars for 25 colones and more in the upper panel, and for 100 colones and more in the lower panel. The same relationship appears in the lower panel of Figure 3 for fees of 200 colones and more. That *ticos* indicate higher fees than *gringos* is both pleasing and somewhat surprising when considering the higher incomes of *gringos* (Figure 5). These results are encouraging, for they imply that *ticos* more than others favor higher fees. In other words, higher fees is not just another idea imported from external advisors.

AREA.--Table 2 shows that fees considered appropriate at Monteverde are substantially higher than fees mentioned at the three national parks. Monteverde, charging an admission fee of 240 colones (120 for students), has the best visitor infrastructure of the four areas. The fees acceptable at Monteverde versus the national parks lead to interesting implications.

The results suggest that respondents probably judge the appropriateness of fees in relation to what they pay presently. Hence visitors at Monteverde start with 240 colones, deciding from there whether the fee "should" be lower, higher, or the same. Similarly, visitors at the national parks most likely judge in relation to their current reference point of 25 colones. This would conform with normal consumer price behavior.

If thinking reflected criteria other than adjustments up or down from present fees, we would expect less fee separation between Monteverde and the national parks than we actually observe. This is because, despite its superior trails and other infrastructure, Monteverde is not that different in purpose from Costa Rica's national parks. The comments of many visitors, including *ticos*, reveal confusion over the point that Monteverde is privately owned and managed.

The demonstrated willingness of current visitors to pay fees of more than 200 colones at Monteverde is a positive sign for the potential of fees to be set higher at the national parks. The Monteverde experience suggests that entrance fees could increase substantially in the national parks before visitor resistance is encountered, assuming that visitors' services are developed accordingly. On the other hand, Monteverde is a unique community, attractive to *gringos* in particular because of cultural and historical factors linked to the USA. Thus visitors to Monteverde are a narrower cross-section than visitors to national parks. Here is where similarity between Monteverde and the national parks ends, and where lessons to be learned from Monteverde's fees cannot be applied elsewhere.

A question within the National Parks Service is whether fees should vary from one national park to another. Figure 6 provides a visual answer for the three parks in the survey. Some differences between parks can be detected. On the other hand, they are not sufficiently great to warrant different fees in different parks. If the data are regarded as demand schedules, then revenue is maximized by charging a fee of 50 colones for *ticos* and 100 colones for *gringos* at each of the three parks. For *ticos*, any fee in the range of 25-100 colones raises about the same revenue. For *gringos*, the fee of 100 colones is clearly superior to any other in terms of revenue generated.

In reality, the data do not measure revealed demand, and higher fees are unlikely to decrease visitation as much as suggested by Figure 6. We believe that respondents would pay higher fees than they indicate in the survey while continuing to come as park visitors. Hence revenue maximization would call for fees higher than those stated in the preceding paragraph. On the other hand, the Costa Rican National Parks Service does not manage for revenue maximization as a priority. More important is to avoid criticism, implying that fees cannot rise too far and too rapidly.

FAMILY.--Over one-third of surveyed respondents were accompanied by family members. This is often one person (43 percent), but just as often includes groups of 2-4 persons (43 percent), and occasionally refers to large families of five or more (14 percent). Family visitation is more frequently encountered among *ticos* than *gringos*, and most large families are *ticos*. The survey period, falling within the Costa Rican winter and school term, underestimates the proportion of family visitors during a full year.

A small but statistically significant negative correlation exists between family size and entrance fees. The correlation is $-.19$ for residents (Sig=.031) as well as for non-residents (Sig=.007). Hence family size deserves further consideration as a possible determinant in fee policy in conjunction with other factors.

REASON.--Most visitation is motivated by general sightseeing, both among *ticos* and *gringos* (Figure 7). A substantial share of *ticos* regard their visitation as a social opportunity and to have fun, while about one-fifth of *gringos* indicate natural history as their primary motivation. Visitation for research and scientific purposes is a small share of the total.

Motivations also vary by protected area. Natural history and research are relatively more important at Monteverde than at the other surveyed areas. In comparison, social visits account for a relatively high proportion of activity at the beach parks of Manuel Antonio and Cahuita.

It has been suggested that researchers and natural history specialists pay higher fees than other visitors. The thinking is that specialists should pay higher fees because of their access to the protected areas' biological resources. This would be particularly true if researchers and natural history specialists were allowed into zones restricted from other use,

used guide services offered by the park, or enjoyed other advantages not available to recreational visitors.

Researchers and natural history visitors show a willingness to pay higher fees than other visitors, at least in reference to fees for *gringos* (Table 3). However, these segments are overrepresented at Monteverde, where existing entrance fees and the share of *gringo* visitors are high. This suggests that purpose, area, and residence must be examined simultaneously.

LENGTH OF STAY.--Should persons who enter a particular protected area on successive days receive a fee discount? This presents another conceptual and statistical problem, since length of stay varies with the protected area (Figure 8), purpose of visit, and whether the visitor is *tico* or *gringa*. Simple correlation coefficients show no relation between length of visit and views on appropriate fees, but this cannot be accepted at face value without controlling for covariates.

OTHER FACTORS.--Space limitations prevent a full discussion of other factors influencing views on entrance fees. This refers to factors which cannot be used in policies to set fees, but which do affect willingness to pay. Table 4 summarizes simple correlations between views on fees and some of these other explanations. Relatively more correlations are statistically significant for *gringos* than for *ticos*. Yet the amount of correlation is not large for either group, or for any single factor.

Fee level is positively correlated with the number of protected areas respondents have visited in Costa Rica, and with level of formal education. Each respondent listed up to three things liked and not liked about the visit, and attitudes about fees are positively and negatively correlated with the number of items so listed. Income and age are positive factors for fees in the case of *gringos*, but there is little if any relationship in the case of *ticos*. Number of previous visits to the same area bears no relation to views on fees.

Findings of Multi-Variate Analysis

The interrelationships described in the preceding section imply that willingness to pay higher fees is not correctly analyzed except by considering several variables at a time. This led to an analysis of variance (ANOVA) to test the policy variables of residence, area, reason for coming, family size, and length of stay. Results are presented in Tables 5 and 6.

The variables were divided into two parts, beginning with how views on fees vary between areas, residence, and reasons for visitation. These three variables explain only a small proportion of total variation, although each of area and residence is highly significant. Controlling for area and residence, the reason for visitation explains only a small amount of additional variation.

A second grouping examined reason for visitation in association with family size and length of visit. These three variables together do not account for a sufficient share of total variation to merit further consideration. Reason for visitation is significant (*ticos*) or almost significant (*gringos*), even though it explains only a small amount of total variation.

These results furnish little empirical support for fee differentiation by family size and length of visit. They provide possible support for differentiation by reason for visit, and unquestionable support for differentiation between Monteverde and the national parks. The conclusions on family size, length of visit, and reason for visit warrant testing by other methods to confirm or refute the indirect associations revealed through this study.

Discussion

The key finding for the National Parks Service of Costa Rica is that visitors are willing to pay higher fees than those charged now. This view is shared by *ticos* and *gringos*. Moreover, both groups of visitors agree that *gringos* should pay higher fees than *ticos*. At the national parks, a fee of 50 colones for *ticos* and 100 colones for *gringos* would generate substantially increased revenue (Table 7) while respecting limits on willingness-to-pay. Comparing lower and upper bounds of Table 7, inelastic demand seems likely when considering that entrance fees are a very small part of travel costs, especially costs of *gringos*. This would favor visitation levels and revenue estimates near the upper possibility.

That acceptable fees for *gringos* are double those for *ticos* calls renewed attention to revise or re-interpret current law in the National Parks Service. Precedence for dual fees can be found in Costa Rica's airport taxes and in tuition charges at two of the country's major public universities. Most importantly in the present context, the Wildlife Service recently adopted dual fees for hunting and fishing licenses. These examples should be carefully considered by the National Parks Service as it reviews fee policy.

For *ticos*, many visitors favor the existing fee of 25 colones. However, those who think the fee should be 50 colones or higher are a majority (52 percent) if we exclude the views of respondents who said that entrance should be free. Free entrance is less a price than a philosophical viewpoint, and a viewpoint probably not tenable within current policies.

The survey's findings have to be qualified with respect to potential biases. What can be concluded from a survey conducted in the Costa Rican winter when most visitation occurs in the summer (i.e., December through March)? What should be fee policy at the many protected areas which are less visited than the four surveyed here?

Winter visitors include relatively more students, teachers, and others of modest incomes. In comparison, the Costa Rican summer draws high-income vacationers, both *ticos* and *gringos*. Most natural history tours are organized for the summer. The relation between income and views on higher fees is positive. Secondly, it is the natural history visitor who is most disposed to pay higher entrance fees. Neither relation is strong in a statistical sense, but both support a working hypothesis that the winter survey conservatively estimates willingness-to-pay by summer visitors.

Fee level at lightly visited protected areas has only minor consequences for revenue generated by Costa Rica's protected area system. Some 30 national parks, wildlife refuges, recreational areas and other protected areas account for one-fourth or less of total visitation. This implies that fees could be left at their current low level until more is learned about willingness-to-pay. Low visitation might be explained by difficult accessibility, lack of attractiveness as a destination, or both. In conventional demand theory, either or both factors should lead to a low user price.

An opposing argument is that uniform fees throughout the whole system would be easy for visitors to understand, and for the National Parks Service to administer. Still another position, often heard within the National Parks Service, is that lightly visited areas should charge higher fees than elsewhere as a basis for recovering their higher unit costs. This range of views on what to charge at lightly visited areas needs further clarification, debate, and empirical investigation.

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Figure 1. Number of Persons Surveyed at Each of Four Protected Areas, Residents and Non-Residents of Costa Rica.

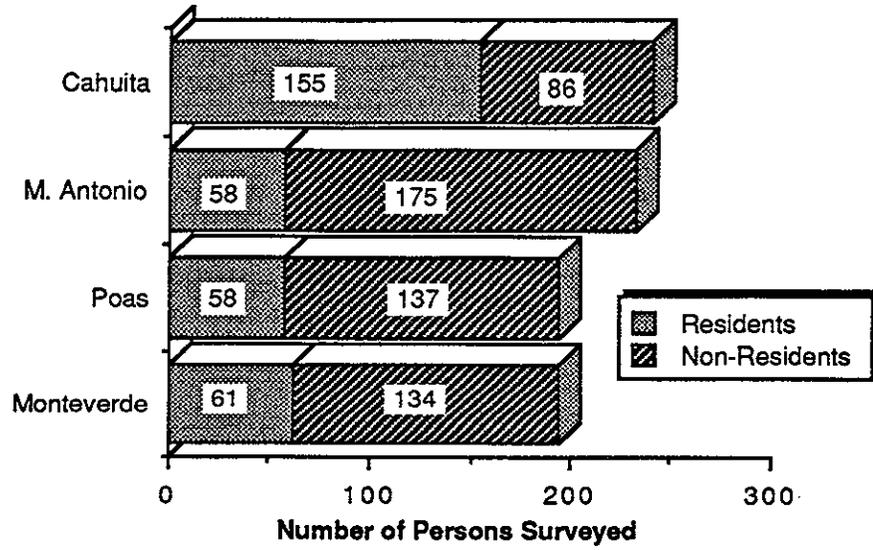


Figure 2. Entrance Fees Considered Appropriate at Three National Parks (Poas, M. Antonio, Cahuita), Comparing Views of Resident and Non-Resident Visitors.

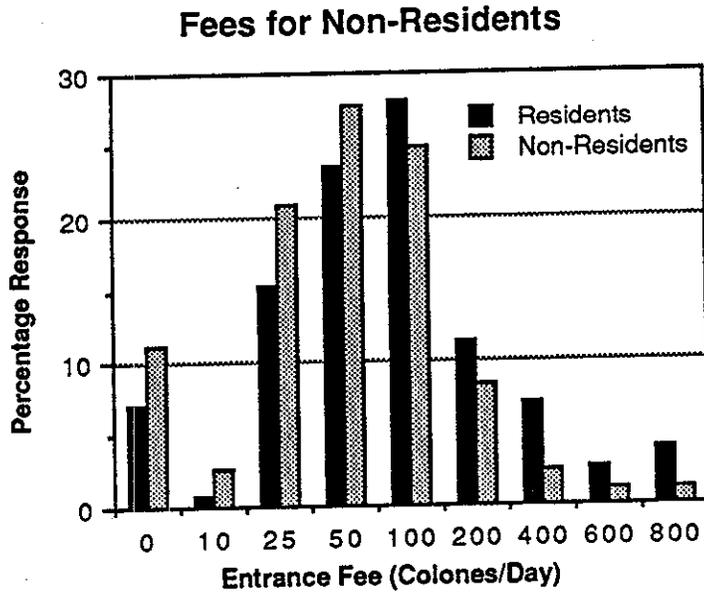
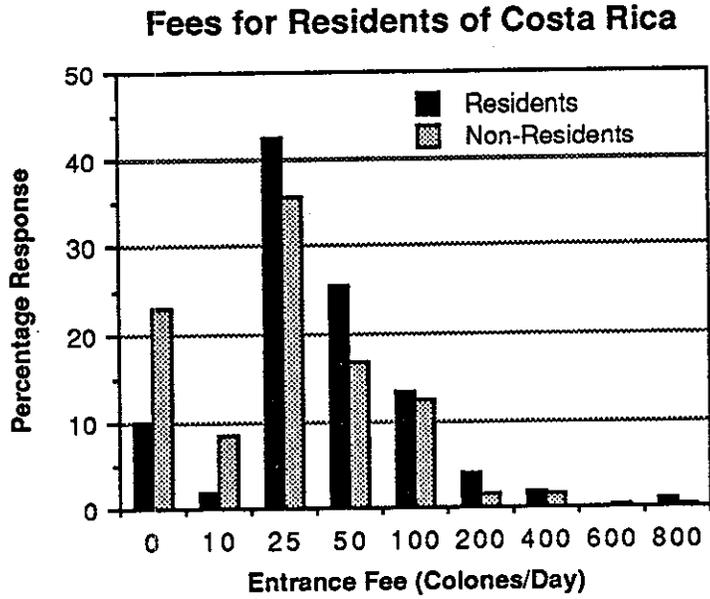


Figure 3. Entrance Fees Considered Appropriate at the Monteverde Cloud Forest Reserve, Comparing Views of Resident and Non-Resident Visitors.

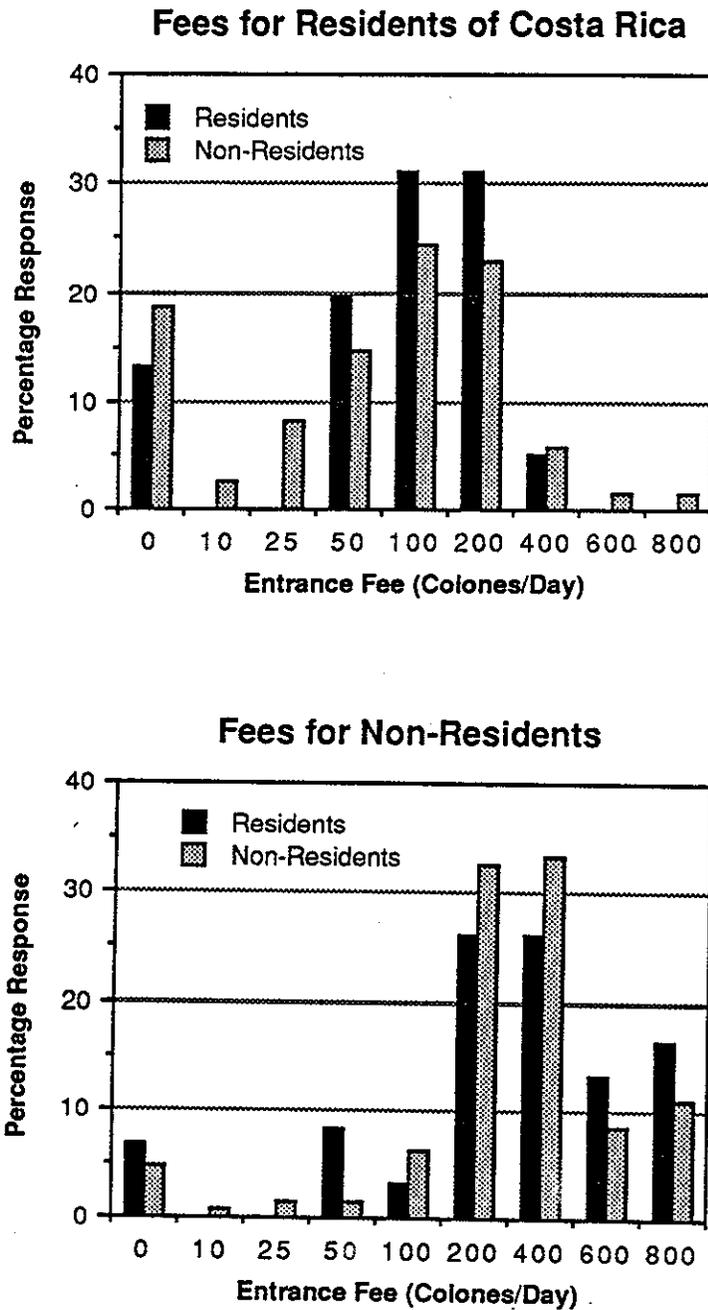


Figure 4. Survey Respondents Cross-Classified by Residence and Nationality.

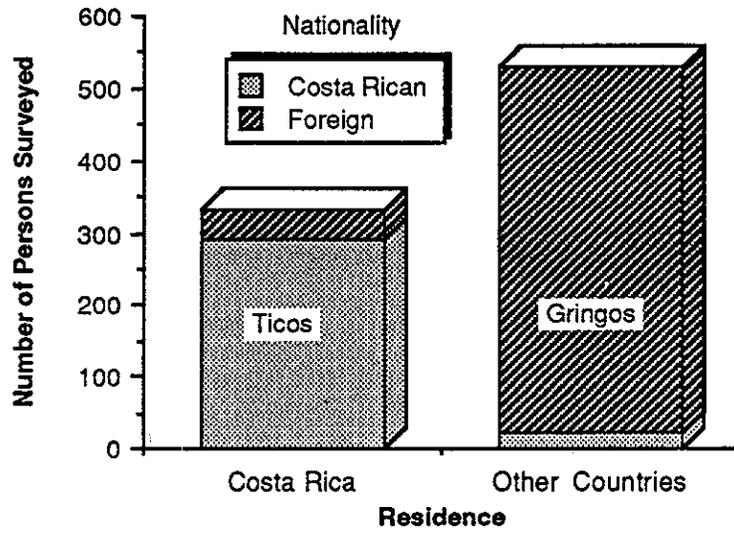


Figure 5. Income Distribution of Survey Respondents, Comparing Resident and Non-Resident Visitors.

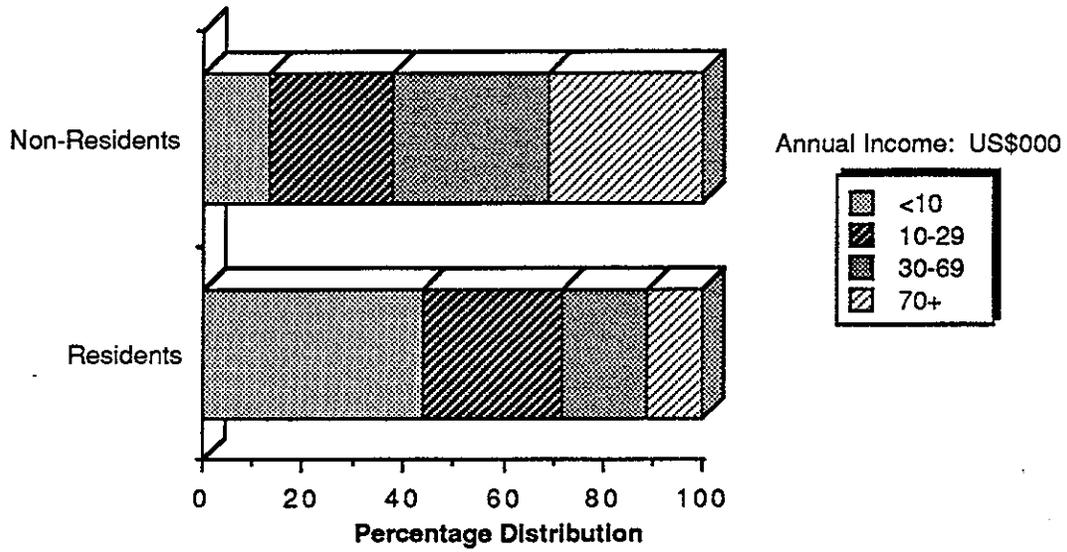


Figure 6. Entrance Fees Considered Appropriate at Poas, Manuel Antonio, and Cahuita National Parks.

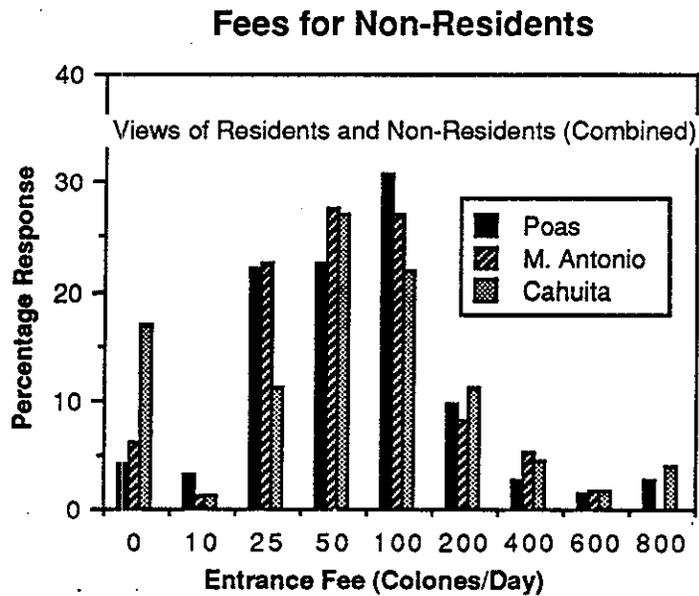
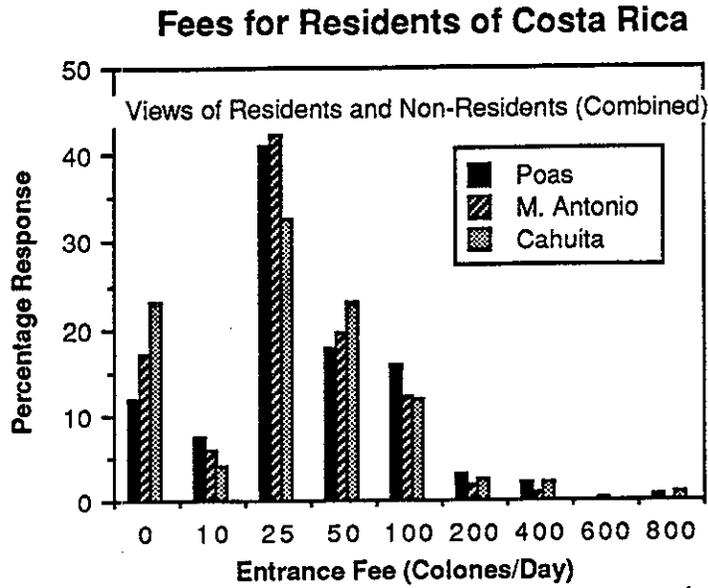


Figure 7. Principal Reasons for Visitation, Comparing Resident and Non-Resident Visitors.

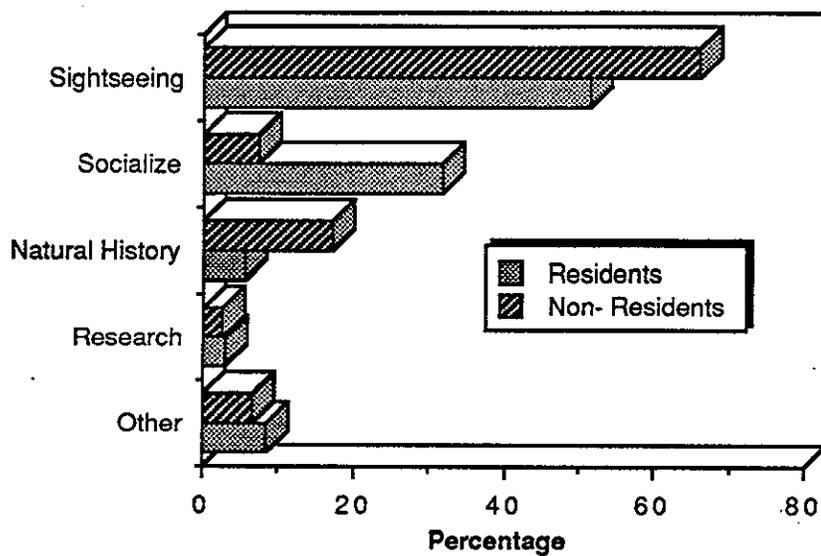


Figure 8. Length of Stay at Different Protected Areas, Combining Resident and Non-Resident Visitors.

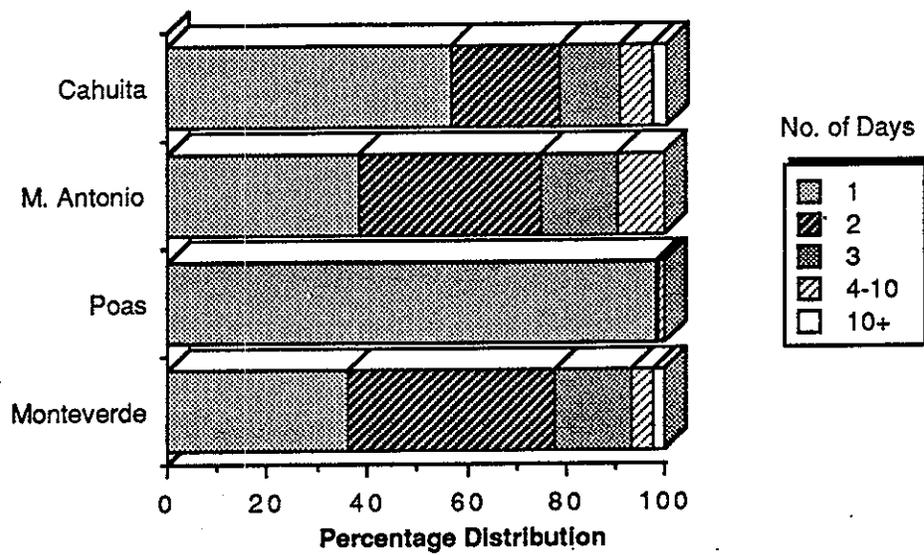


Table 1. Views on Appropriate Fees for Residents Versus Non-Residents, Total Survey (Monteverde, Poas, M. Antonio, Cahuita).

A. Views Given by Residents [Chi-Square=330; D.F.=56; Sig=.000]

<u>Fees for Residents:</u>	<u>Fees for Non-Residents (Colones per Day):</u>								
	<u>0</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>800+</u>
	------(no. respondents per cell)-----								
0	13	0	2	3	3	0	1	1	7
10	0	1	0	0	2	0	1	0	1
25	7	1	33	28	21	8	3	3	1
50	0	0	2	30	25	15	5	1	0
100	0	0	0	1	20	15	14	1	3
200	0	0	0	0	1	6	8	7	6
400	0	0	1	0	1	1	2	2	1
600	0	0	0	0	0	0	0	0	0
800+	1	0	0	0	0	0	0	0	1

B. Views Given by Non-Residents [Chi-Square=624; D.F.=64; Sig=.000]

<u>Fees for Residents:</u>	<u>Fees for Non-Residents (Colones per Day):</u>								
	<u>0</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>800+</u>
	------(no. respondents per cell)-----								
0	42	3	8	17	17	9	2	2	7
10	0	6	9	6	7	4	2	0	0
25	3	1	61	36	23	11	3	3	1
50	0	0	0	44	18	7	9	2	0
100	1	0	1	1	35	19	12	3	4
200	0	0	0	1	0	20	11	1	1
400	0	0	0	0	0	1	6	2	3
600	0	1	0	0	0	0	0	2	0
800+	0	0	0	0	0	1	0	0	2

Table 2. Views on Appropriate Entrance Fees, Monteverde Compared with Three National Parks (Poas, M. Antonio, Cahuita).

	Appropriate Fee (Colones per Day):								
	<u>0</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>800+</u>
	-----(% response)-----								
A. Fees for Residents [Chi-Square=183; D.F.=8; Sig=.000]									
Monteverde: (n=185)	16.8	1.6	5.4	16.2	27.0	25.4	5.4	1.1	1.1
Nat. Parks: (n=635)	17.6	5.7	38.4	20.3	13.1	2.5	1.7	0.2	0.5
B. Fees for Non-Residents [Chi-Square=309; D.F.=8; Sig=.000]									
Monteverde: (n=191)	5.2	0.5	1.0	3.7	5.2	30.9	30.9	9.9	12.6
Nat. Parks: (n=638)	9.4	1.9	18.5	26.0	26.3	9.7	4.2	1.7	2.2

Table 3. Views on Appropriate Fees by Reason for Visit, Total Survey (Monteverde, Poas, M. Antonio, Cahuita).

A. Fees for Residents [Chi-Square=40; D.F.=32; Sig.=.154]

	Appropriate Fee (Colones per Day):								
	<u>0</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>800+</u>
	-----(% response)-----								
Research	23.8	0.0	42.9	9.5	19.0	4.8	0.0	0.0	0.0
Nat. History	13.8	2.1	21.3	19.1	26.6	10.6	4.3	0.0	2.1
Sightseeing	18.2	5.5	30.7	18.6	14.5	9.1	2.7	0.7	0.0
Socialize	15.1	4.8	35.7	23.8	14.3	4.8	0.0	0.0	1.6
Others	18.5	3.7	33.3	20.4	16.7	5.6	1.9	0.0	0.0

B. Fees for Non-Residents [Chi-Square=52; D.F.=32; Sig.=.013]

	Appropriate Fee (Colones per Day):								
	<u>0</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>200</u>	<u>400</u>	<u>600</u>	<u>800+</u>
	-----(% response)-----								
Research	0.0	0.0	23.8	19.0	9.5	14.3	23.8	9.5	0.0
Nat. History	2.1	1.0	7.2	14.4	19.6	26.8	17.5	5.2	6.2
Sightseeing	9.1	1.6	14.7	20.5	21.4	13.4	10.5	4.2	4.7
Socialize	9.8	1.6	17.9	26.0	20.3	11.4	6.5	1.6	4.9
Others	7.5	1.9	17.0	22.6	32.1	11.3	3.8	1.9	1.9

Table 4. Views on Entrance Fees Correlated with Other Factors, Total Survey (Monteverde, Poas, M. Antonio, Cahuita).

	<u>Fees for Residents^a</u>	<u>Fees for Non-Residents^b</u>
	------(correlation coefficients ^c)-----	
No. Other Protected Areas Visited in C.R. (0-8 or more)	.16 (320) Sig.=.002	.10 (506) Sig.=.010
Years of Education (1-17 or more)	.15 (310) Sig.=.005	.21 (501) Sig.=.000
No. Things Liked About the Visit (0-3)	.14 (320) Sig.=.008	.08 (508) Sig.=.039
Overall Rating of the Visit (5-point scale)	.07 (310) Sig.=.103	.23 (502) Sig.=.000
Annual Income (11 classes)	.06 (276) Sig.=.166	.16 (451) Sig.=.000
Age of Respondent (17-74)	.00 (314) Sig.=.499	.17 (507) Sig.=.000
No. Previous Visits to Same Area (0-7 or more)	-.04 (319) Sig.=.207	-.04 (508) Sig.=.168
No. Things Not Liked About the Visit (0-3)	-.06 (320) Sig.=.149	-.15 (508) Sig.=.000

^aResponses by residents only.

^bResponses by non-residents only.

^cNo. of observations in parentheses.

Table 5. Analysis of Variance (ANOVA), Fees Considered Appropriate for Residents.

<u>Source of Variation</u>	<u>Sum of Squares</u>	<u>D.F.</u>	<u>Mean Square</u>	<u>F</u>	<u>Sig. of F</u>
A. First Grouping					
Main Effects	250.8	6	41.8	17.5	0.000
AREA ^a	166.3	1	166.3	69.8	.000
RESIDENCE	49.2	1	49.2	20.7	.000
REASON	18.0	4	4.5	1.9	.109
2-Way Interactions	32.2	9	3.6	1.5	.143
3-Way Interaction	12.7	4	3.2	1.3	.257
Explained	295.7	19	15.6	6.5	.000
Residual	1694.9	711	2.4		
Total	1990.6	730	2.7		
R Squared=.115; R=.126					
^a Monteverde (private) vs. Poas+M.Antonio+Cahuita (national parks).					
B. Second Grouping					
Main Effects	40.5	13	3.2	1.3	.204
REASON	19.6	3	6.5	2.8	.043
FAMILY	12.7	6	2.1	.9	.498
LENGTH OF STAY	3.7	4	.9	.4	.815
Explained	40.5	13	3.1	1.3	.204
Residual	487.1	206	2.3		
Total	527.7	219	2.4		

Table 6. Analysis of Variance (ANOVA), Fees Considered Appropriate for Non-Residents.

<u>Source of Variation</u>	<u>Sum of Squares</u>	<u>D.F.</u>	<u>Mean Square</u>	<u>F</u>	<u>Sig. of F</u>
A. First Grouping					
Main Effects	713.4	6	118.9	41.4	0.000
AREA ^a	556.0	1	556.0	193.5	.000
RESIDENCE	55.0	1	55.0	19.2	.000
REASON	15.4	4	3.9	1.3	.252
2-Way Interactions	39.6	9	4.4	1.5	.132
3-Way Interaction	10.4	4	2.6	.9	.460
Explained	763.4	19	40.2	14.0	0.000
Residual	2065.3	719	2.9		
Total	2828.7	738	3.8		
R Squared=.252; R=.502					
^a Monteverde (private) vs. Poas+M.Antonio+Cahuita (national parks).					
B. Second Grouping					
Main Effects	73.6	13	5.7	1.7	.062
REASON	20.7	3	6.9	2.1	.105
FAMILY	28.3	6	4.7	1.4	.208
LENGTH OF STAY	12.4	4	3.1	.9	.445
Explained	73.6	13	5.7	1.7	.062
Residual	703.9	212	3.3		
Total	777.5	225	3.5		

Table 7. Worksheet on Revenue Projections at Three National Parks if Entrance Fees are Raised.

I. PRESENT SITUATION (Poas, M. Antonio, Cahuita)

190 thousand residents + 100 thousand non-residents pay 25 colones

Total: 290 thousand visitors pay 7.25 million colones/yr.

II. IF FEES ARE RAISED TO 50 COLONES FOR RESIDENTS AND 100 COLONES FOR NON-RESIDENTS

A. LOWER LIMIT ON REVENUE: Visitation decreases by 47% for residents and 57% for non-residents (i.e., implicit price elasticities of demand from fees considered appropriate):

101 thousand residents pay 50 colones = 5.05 million colones/yr.

43 thousand non-residents pay 100 colones = 4.30 million colones/yr.

Total: 144 thousand visitors pay 9.35 million colones/yr.

Changes from (I): Revenue increases by 29 percent^a while visitation decreases by 50 percent.

B. UPPER LIMIT ON REVENUE: Visitation is unaffected by fee increases (i.e., perfectly inelastic demand):

190 thousand residents pay 50 colones = 9.50 million colones/yr.

100 thousand non-residents pay 100 colones = 10.00 million colones/yr.

Total: 290 thousand visitors pay 19.50 million colones/yr.

Changes from (I): Revenue increases by 169 percent^a while visitation stays the same as before.

^aBefore exclusions for children, school groups, retired persons, etc.
