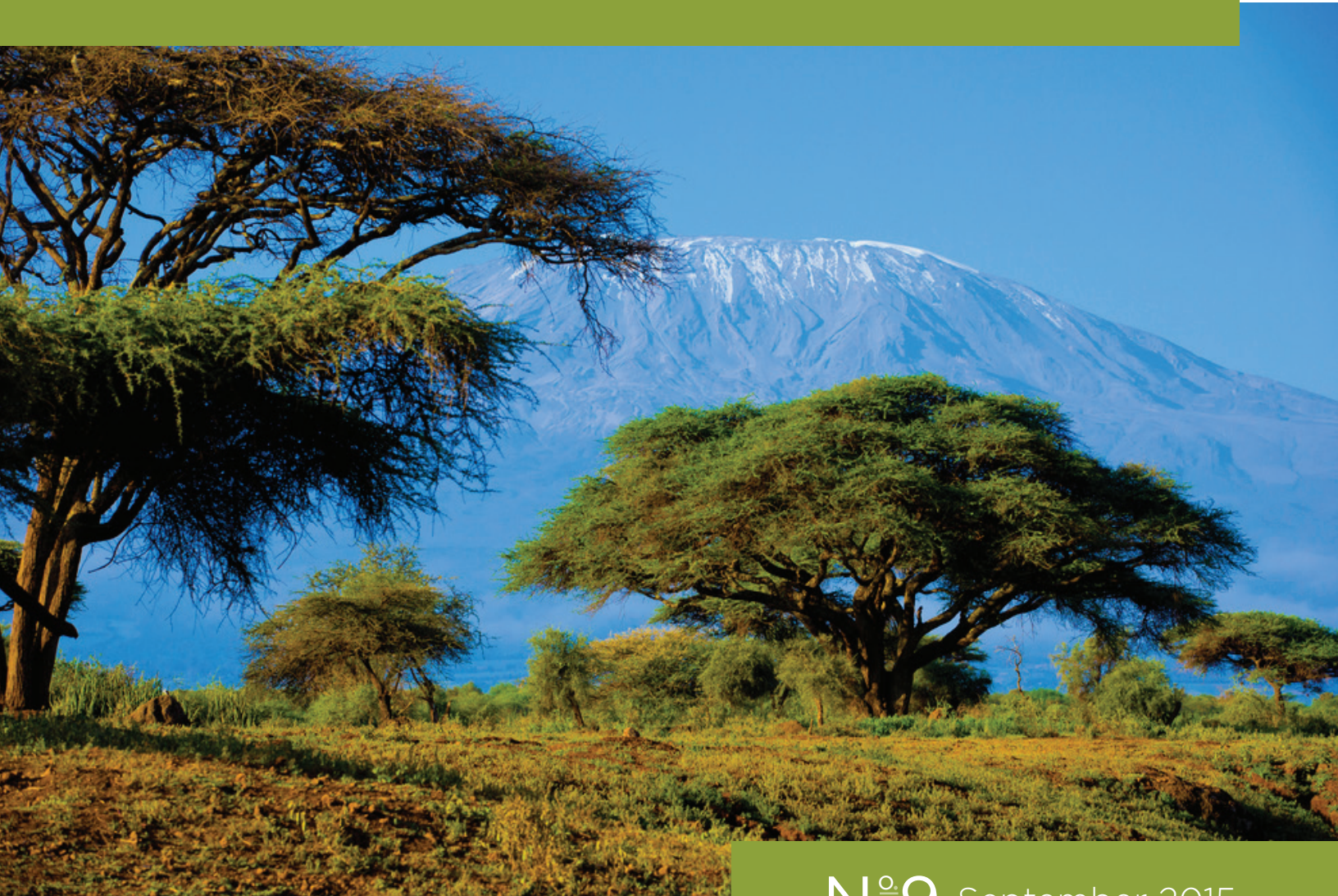




**Tourists' Willingness to Pay to
Visit Tanzania's National Parks:
A Contingent Valuation Study**

**DISCUSSION
PAPER**



N^o 9 September 2015



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September 2015 / N° 9

Conservation Strategy Fund

Tourists' Willingness to Pay to Visit Tanzania's National Parks: A Contingent Valuation Study

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Photo: Andrzej Kubik

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EXECUTIVE SUMMARY

Tanzania National Parks (TANAPA) manages the country's 16 national parks using revenues from conservation fees and other charges for park usage. Effective conservation and, in turn, the quality of Tanzania's tourism products therefore depend on setting fees appropriately. This means balancing potential for increased per visitor revenues with any decline in visitation caused by price increases, while keeping in mind other management objectives.

Fees are reviewed every two years. This study examines park visitors' willingness to pay higher fees to enter the parks, using 3,200 detailed surveys gathered between March-May 2015. Findings will inform fee change decisions due to go into effect in July 2016.

Visitors from overseas represented 75% of park users during the period of study. These non-resident visitors also pay the highest fees, so their attitudes are key to setting appropriate financial policy for the parks. We found that for this group, substantially higher fees at Serengeti would not seriously diminish visitation, and accordingly we recommend a significant fee increase for this park. Phasing in a \$60 increase in the Serengeti conservation fee over several years can be expected to raise at least an additional \$7.8 million in 2016 and \$14.8 million in 2020, equivalent to a 57% increase in total revenue from the park.

For Kilimanjaro, a fee increase is not recommended, in light of relatively high price sensitivity and perception by a large percentage of visitors that fees are already too high. For the other northern parks, foreign visitors' willingness to pay higher fees was more ambiguous, varying by park and with results depending on the economic models used to analyze the data. Willingness to pay is certainly less than Serengeti, but it is not clear whether declines in visitation will cause overall revenues to fall if prices are raised. However, recent experience suggests that small increases in fees at the northern parks have not negatively affected visitation. We recommend that any fee increase for 2016 be limited to Lake Manyara and perhaps Arusha, and furthermore be modest; perhaps \$5, which would be sufficient to keep pace with in-country inflation. The low levels of non-resident visitation in the southern and western parks argue against fee increases there; any additional revenue would be minimal, and the goal of diversifying visitation poorly served.

Tanzanians represent just 13% of visitors surveyed but they visit a diverse set of parks, with close to 50% going to the under-used southern parks. Our results indicate that Tanzanians are relatively sensitive to small fee increases. In view of that fact and given comparatively low fee levels, we do not recommend increases for Tanzanian park visitors. To the contrary, substantial social benefit can be achieved by increasing nationals' use of parks, so measures should be considered to increase it, including controlling costs of visitation.

Expatriates living in Tanzania represent the other important visitor category, equivalent to 10% of all visitors surveyed. Expatriates pay half the fee charged to non-residents, a policy we recommend maintaining for purposes of simplicity. While they are relatively more resistant to price increases than non-resident tourists, any overall revenue losses associated with higher park fees recommended above are expected to be trivial, and outweighed by the administrative clarity of the current policy. Furthermore, expatriates are relatively well placed to diversify their visitation if fees in the Northern circuit increase. Again, measures to facilitate such diversification should be explored.

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1. INTRODUCTION

Tanzania National Parks (TANAPA) is a Parastatal Organization mandated to manage all protected areas of the National Parks category. Unlike most park management agencies, TANAPA receives no government budget appropriations; instead, operations are principally financed through tourism revenues. A large proportion of tourism-generated revenue comes from *conservation fees*, equivalent to a daily use or entrance fee paid by visitors when they enter each park.

Since TANAPA's establishment in 1959, the organization's responsibility has grown dramatically, from managing one park (Serengeti) to sixteen National Parks countrywide. Of these, three (Arusha, Lake Manyara, and Tarangire) generate sufficient revenue to fund their own operations, two (Serengeti and Kilimanjaro) generate revenue in excess of their management costs, and the remaining 11 bring in less revenue than their management costs. Management of this final group is funded by revenue generated at Serengeti and Kilimanjaro.

In the early 2000s, TANAPA and Conservation Strategy Fund (CSF) partnered to assess fee levels, analyzing the hypothesis that TANAPA could increase revenues and decrease crowding in the northern parks through strategic fee increases (Bonine et al. 2004). In subsequent years, TANAPA increased fees several times without negatively effecting visitation, in turn resulting in a significant growth in revenues. Since 2013, the organization has had a policy in place to review its conservation fees every two years. New fees are communicated to stakeholders one year before they are put into effect to allow appropriate time for any adjustments to business practices.

According to this schedule, TANAPA was scheduled to implement new fee levels as of July 1st 2015. However, TANAPA management decided to delay this decision by one year in order to undertake a thorough study of visitors' willingness to pay increased fees as a basis for the current decision. Without information on visitors' price-sensitivity, TANAPA risks either overpricing parks and thereby losing revenue by reducing visitation, or underpricing parks and leaving badly needed revenues on the table. Simple observation of visitor trends is inadequate for this purpose. For instance, growth in visitation to the Northern circuit overall does not necessarily indicate significant scope for fee increases. Conversely, declining visitation to Kilimanjaro for the past two years does not necessarily indicate that fees are too high. Similarly, a lack of foreign tourists on its southern circuit is not necessarily driven by park fee levels.¹

Understanding tourists' sensitivity to fees requires a market study. Given that TANAPA disaggregates fees at the level of individual parks or groups of parks, as well as by three visitor types (1) non-residents of East Africa, (2) expatriates, and (3) Tanzanians and other East Africans, there is an excellent opportunity to understand price sensitivity by park and type of visitor. This study attempts to provide such information to inform conservation fee increases going into effect in 1 July 2016. With park management costs significantly higher than TANAPA revenues, good information will have a major impact on TANAPA's ability to achieve its mission.

The remainder of the document is organized as follows: the following section (Section 2) presents the methodology, including both the theoretical underpinnings and specific design. Section 3 gives results, including descriptive information about the visitors in the sample, visitor characteristics that appear to determine willingness to pay increased fees, average willingness to pay, derived demand curves, and revenue projections. Section 4 provides recommendations regarding fee changes in different parks and groups of parks across the National Park system, as well as offering a perspective

¹ Bonine et al. (2004) found that, as of a decade ago, this decision was indeed driven by other considerations, most basically simple lack of knowledge.

on how fee increases might best be implemented to ensure that changes are most painlessly accommodated by stakeholders.

2. STUDY METHODOLOGY

2.1 Methodological approach

The methodology employed is contingent valuation (CV), an approach used in market research, as well as to understand the values of non-market goods (Mitchell and Carson, 1989). CV is within the family of stated-preference valuation techniques that determine willingness-to-pay (WTP) and associated demand curves, by asking people questions about hypothetical markets. These may be contrasted with revealed preference valuation approaches that deduce WTP by observing actual behavior in the face of real choices, as is the case for goods traded in existing markets. The CV approach, in contrast, can generate information about market options that do not yet exist (Pearce 2002).

We gathered data through in-person interviews with tourists visiting the parks, using on a detailed questionnaire (Appendix 1). The questionnaire included the set of themes, in appropriate order, currently understood to represent best practice for generating reliable CV results (Carson 2000, Pearce 2002). In particular, following Maldonado and Sanchez (2014), our questionnaire was structured as follows:

1. Introduction, including presentation of the initiative, clarifying confidentiality, and asking questions to determine visitors' opinions, knowledge, and planned use of the park;
2. Definition of the current scenario, in this case presenting basic information about the 16 parks, their management, and threats;
3. Valuation, describing the "with payment" scenario, making clear what change visitors were being asked to value, reminding respondents of income and other constraints, and then asking the relevant Willingness to Pay question;
4. Follow up questions, including respondents' confidence in and reason for their choice regarding willingness to pay; and
5. Questions related to demographics and attitude towards the environment.

We used a *dichotomous choice* (also known as *referendum*) approach to elicit WTP, with respondents asked simply to decide whether or not (yes/no) they would still choose to visit the park in question if the fee increased by a specified amount. Under this approach, the actual amount asked is randomized among visitors, with the appropriate range determined during a pilot exercise. The dichotomous choice approach is broadly recommended (e.g., Arrow et al. 1993), and while no approach is perfect, it addresses various potential challenges/biases relevant to the context, including generation of extreme responses, strategic bidding,² and prominence bias,³ among other issues. It is also simpler for respondents to consider, as it parallels market decisions faced on a daily basis. A limitation of the dichotomous choice approach is that it requires a larger sample size than approaches that directly ask for maximum WTP, because information is obtained only on whether the respondent's WTP is above or below a specific amount, not what the exact amount is. However, our estimated sample size prior to implementation (6,000 total respondents) was large enough to accommodate this issue.

² In which respondents give inaccurate bids to intentionally influence the study results

³ In which respondents are more likely to choose round or other "prominent" numbers

Following initial questionnaire design, a field pilot was carried out, with 152 surveys gathered from 10 parks.⁴ Pilot data enabled us to refine the questionnaire instrument, as well as employ an open-ended valuation question (i.e., directly asking the maximum that each visitor would be willing to pay) to determine the range of fee increases that respondents would be asked to consider in actual data collection. Final values used for actual data collection were selected to represent ~90% of observed open bids, as follows:

- Tanzanians and other East Africans: TZH 4,000, 9,000, 13,000, 18,000, 22,000
- Non-residents of E. Africa and Expatriates: US\$ 10, 30, 50, 70, 90, 110

Ideas related to methodology and application were also drawn from a review of the relevant literature, including the studies summarized in Table 1, below.

Table 1: Similar studies

Issue	CV approach	Econometric model	Demand curve	Reference
Setting park fees, Costa Rica	Dichotomous choice	Logit regression	Regression prediction varying fee level	Shultz et al. (1998)
Demand elasticity for two parks, Pakistan	Dichotomous choice	Probit regression	Elasticity from probit	Khan (2007)
Setting Park fees, Annapurna, Nepal	Dichotomous choice	Logit regression	Regression prediction varying fee level	Baral et al. (2008)
Peak load pricing of alpine peaks, Colorado, USA	Dichotomous Choice	Logit regression	Regression prediction varying fee level	Loomis and Keske (2009)
Setting fishing fees, USA	Dichotomous choice	Logistic regression	Regression prediction varying fee level	Sutton et al. (2001)
Setting turkey hunting permit fees, USA	Dichotomous choice	Logistic regression	Regression prediction varying fee level	Brunke et al. (2006)
Price elasticity of visitors' demand, Queensland, Australia	Open-ended (1) and dichotomous choice (2)	Log-linear model; Tobit (1) Logit on log of bid (2)	Coefficient on proportion of population WTP (1) Elasticity at median (2)	Greiner and Rolf (2004)

2.2 Data collection & entry

Prior to pilot data collection, 32 TANAPA staff were trained to gather data during a two-day workshop that included review of each survey question. Enumerators also practiced surveying “live”

⁴ Ruaha, Mikumi, Lake Manyara, Tarangire, Kilimanjaro, Arusha, Serengeti, Gombe and Rubondo Island

during the pilot exercise. Questionnaire administration for actual data gathering proceeded between 11th March and 28th May, 2015 (a total of 79 days), with interviews lasting from 8:00-18:00h daily in all 16 National Parks. To ensure consistency, enumerators were provided with a standardized guide that included statements and explanations necessary at various points in the survey (see Annex 2). To support enumerators in remote locations as questions emerged during actual data gathering, we formed a *WhatsApp* group, through which enumerators and the TANAPA lead team communicated in real time.

Since visitors were relatively scarce during the survey period, park-specific extensions of data collection time were permitted on a case-by-case basis. Interviews were strictly conducted prior to visitors' entering the parks, to ensure that WTP values reflected visitors' expectations prior to the visit (i.e., based on the criteria they used when they decided to visit) rather than being influenced by their perception of their actual visit. Only one person per tourist group was interviewed, where possible, the one who had paid for the trip. Care was taken not to re-interview those who had already been interviewed in other parks.

Data entry was centralized and closely supervised to control for quality. Prior to beginning analysis, data entry was checked a second time, including identifying any inconsistent responses, such as respondents registered as being both Tanzanian and Expatriate, or responses coded as outside of the required range for each question. In these cases, we consulted the original questionnaire to determine if the error occurred during data entry, in which case it was fixed. If errors were introduced during the survey, data was recoded as missing for the relevant question.

2.3 Descriptive analysis

Our first analytical step was to carry out a descriptive analysis, including calculation of means and standard deviations for all relevant survey questions, broken down by visitor type or park group where appropriate. The results section of this document includes results related to basic socio-economic characteristics, visitation choices, and knowledge of and attitude towards fees. Calculation of these descriptive statistics highlighted several questions that were not the immediate focus of the study, but for which it was desirable to have a greater understanding of causality than could be provided by descriptive statistics alone. We carried out a preliminary analysis of one of these: the determinants of whether a visitor knew the conservation fee. This analysis used a multivariate probit regression, regressing whether or not the respondent knew the fee against residency type and trip type.

We also provide and discuss the distribution of responses to our willingness to pay question. Finally, we assess the reasons why visitors were or were not willing to pay increased fees, including the percentage and breakdown of reasons for "protest votes," i.e., respondents who may have a value of visiting greater than the current fee, but nonetheless stated they would be unwilling to pay. Protest votes are removed prior to carrying out the remaining analyses.

2.4 Modeling likelihood of paying additional fees

In accordance with the standard approach for analyzing dichotomous choice valuations, we used a probit regression to model the likelihood of visitors being willing to pay an additional fee.⁵ The salient characteristic of probit regression for this purpose is that it permits us to model the probability that visitors will be willing to visit a given park at a particular increase in the conservation fee. While the coefficients of a probit regression cannot be directly interpreted in the same way as in ordinary least squares regression (i.e., as the expected change in outcome for a given change in the independent variable in question), calculation of *marginal effects* following model estimation permits such an interpretation. Accordingly, marginal effects calculations are also provided and interpreted.

With regard to the set of data considered for each analysis, we note that the data gathered in this study included both multiple user groups and multiple parks. It would be theoretically valid to model such data either pooled (i.e., the entire dataset), using dummy variables to capture the specific effect of each user group/park, or alternatively to run separate models on the disaggregated data for each user group/park combination. We make the following choices in this regard:

- Given important differences between each visitor group considered (i.e., Non-residents of East Africa, Expatriates, Tanzanians, and other East Africans) in terms of range of expected WTP as determined during the pilot as well as relevant socio-economic characteristics and visitation preferences, we first disaggregate the data by group (i.e., using only the data for a particular group for analyses relevant to that group) rather than use the entire dataset.
- Given that visitors surveyed at a particular park (i.e., observed demand) are likely to have a higher willingness to pay to enter that park than the rest of the visitors (potential demand), we use the entire relevant visitor-group specific dataset, with dummy variables for the park in question. This approach reduces the probability of overestimating willingness to pay and has the added advantage of making use of more data in understanding visitors' preferences.

We provide both univariate (i.e., testing the impact of the fee increase only on willingness to pay) and multivariate models (i.e., adding additional explanatory variables) to test for robustness of the univariate relationship between fee increase and demand, and to identify visitor characteristics associated with higher or lower willingness to pay.

For the multivariate model, additional explanatory variables (i.e., beyond fee increase amount) considered potentially relevant are shown in Table 2, along with variable type and initial hypothesis about relationship to WTP. Data on income were also gathered for this purpose, but were not used due to concerns about quality.⁶

⁵ We note that some dichotomous choice analyses use logistic regression instead. This choice is informed by an assumption about the distribution of the errors around the estimate. In practical terms, results from both approaches in exercises such as this are very similar.

⁶ Enumerators were skeptical of responses in numerous cases, and on review data were often inconsistent. This is common to research requiring income data, especially where the question must be asked in open form (i.e., respondents directly asked their income rather than which category of income they fit into). However, we are able to include data on education level, which in many cases is strongly correlated with income and can therefore help capture the same effect on outcomes.

Table 2: Explanatory variables considered in the multivariate model

Variable	Type	<i>Ex ante</i> expectation regarding WTP
Age (years)	Continuous	Positive: Older visitors will be more environmentally conscious
Gender	Dichotomous	No expectation
Maximum education level achieved	Categorical (6 levels)	Positive: more educated people will be more environmentally conscious
Marital status	Categorical (4 categories)	No expectation
Respondent contributed to or belonged to an environmental organization	Dichotomous	Positive: more environmentally conscious people more likely to understand conservation costs and be willing to help pay them
How respondent planned trip	Categorical (3 categories)	Positive for trips organized as a tour because respondents consider price as a small fraction of total; Negative for private trips because respondents are more price sensitive
Respondent had previously visited Tanzania	Dichotomous	Positive: repeat visitors care about the country more and are willing to pay to protect its resources
Respondent knew the entrance fee beforehand	Dichotomous	Negative: visitors who knew the fee expected to be more price aware and therefore price sensitive

2.5 Average Willingness to Pay

Average willingness to pay additional fees provides a useful initial measure of demand. In particular, it indicates the value that Tanzania's parks provide their visitors, above and beyond the amount they currently pay, a quantity known as consumer surplus. In valuation studies, average WTP is frequently used to estimate the CS of goods and services that are not transacted in markets. While it is not the primary purpose of this study to provide a valuation of consumer surplus for park visitors, such a calculation is informative and can be made with results available at this stage of analysis. We therefore provide a conservative estimate of CS.

For the purposes of the current study, WTP is also an important indicator of the potential to profitably raise fees. On the other hand, even a large WTP at a given park does not guarantee that it would be profitable to raise fees, because decrease in visitation may offset higher per visitor revenues. Further analyses, described, carried out, and reported below, are necessary to make a direct prediction of impact of fee increase on TANAPA revenues.

We provide three estimates of WTP. The first, called a Turnbull estimate (first proposed by Carson et al. 1994), is intentionally conservative, representing a bottom bound of WTP and requiring no assumptions about the distribution of the data. It is based on the percentage of respondents who answered yes or no to each proposed value, assigning values at the bottom of the potential range to each group ("Fj"). To illustrate, the calculation is given in Table 3 for non-residents, considering all parks as a group. The figure at the bottom right indicates that these visitors are on average willing to pay \$64.28 [in addition to the current fee/total] for park entry country-wide.

Table 3: Turnbull WTP estimation for all parks, non-residents

Additional fee	%yes	%no	Fj	Range	Assigned value	Turnbull WTP
10	86%	14%	0.14	0-10	0	0
30	75%	25%	0.11	10-30	10	1.08
50	64%	36%	0.11	30-50	30	3.30
70	54%	46%	0.10	50-70	50	5.00
90	50%	50%	0.04	70-90	70	2.80
110	43%	57%	0.07	90-110	90	6.30
		100%	0.43	110 - ∞	110	47.30
					WTP (sum)	65.78

The second approach to estimating WTP is based on the parametric regression models described above. Hanemann (1989) provides a formula to calculate mean WTP following regression analysis, assuming that WTP it is non-negative, as follows:

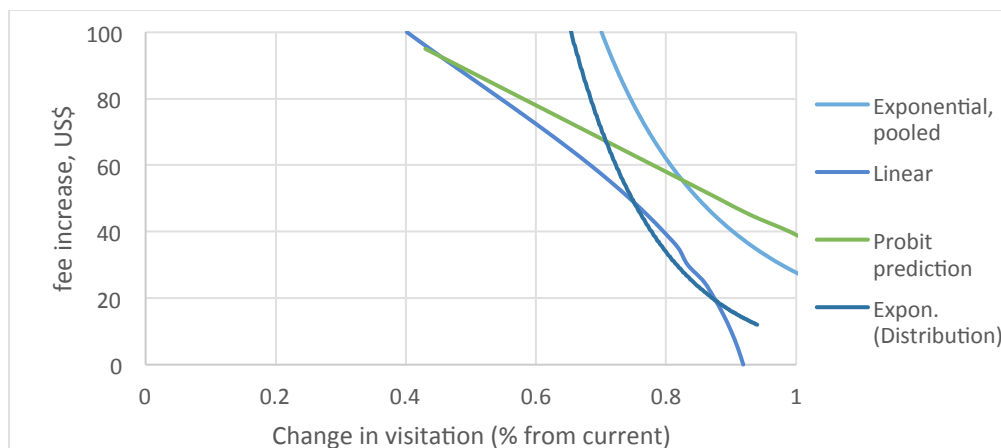
$$\text{Mean WTP} = (\ln(1 + \exp(\beta_0)))/|\beta_1|$$

Where β_0 is the constant term, and β_1 is the coefficient on the monetary amount the visitor is asked to pay. The procedure is similar for the multivariate model.

2.6 Demand curves

Various options are available for deriving price sensitivity and thereby demand curves (See Table 1, above). We note that in making predictions into the future, as is the case here, uncertainty is unavoidable. Figure 1 provides an illustration of the range of legitimate predictions resulting from different approaches, using the case of Serengeti. Included are demand predictions made by 1) exponential demand using the entire dataset as described above (“exponential, pooled”), 2) linear demand using the entire dataset as described above (“linear”), 3) direct prediction from the econometric model (“probit prediction”), and an exponential function fitted directly to the proportion of yes/no responses at each price level, without making use of any additional information from the questionnaire (“Expon., distribution”).

Figure 1: Multiple approaches to predicting non-residents’ demand curves for Serengeti



We explored two of these options in more detail here:

- 1) Estimate price elasticity of demand (the percentage change in quantity of a good demanded at a 1% price increase) as constant. The resulting demand curve has an exponential form, which is common among many types of goods. This calculation is made by estimating the log-transformed marginal effect of fee increase on payment decisions. Probability (i.e., demand) of being willing to pay at a given fee increase is then estimated as $\text{Probability} = e^{B_0 + x \cdot B_1}$; where B_0 is the coefficient on the regression constant, B_1 is the elasticity, and x is the fee increase level.
- 2) Estimate demand as linear (i.e., with variable elasticity). We do this both using marginal effect of fee increase for the average visitor as the slope of the demand curve, and by calculating marginal effects at different values of additional conservation fees (\$5 increments), to account for marginal effects in a probit regression being valid for specific values of the dependent variables. Demand is then estimated as $\text{Probability} = B_0 + x \cdot B_1$, where B_0 is the coefficient on the regression constant, B_1 is marginal effect, and x is the fee increase level. In both cases, all other variables are held at their means.

The two approaches described above result in different projected demand curves. Accordingly, the issue of model selection is considered carefully, and is described further under results. In making recommendations for fee increases, we draw primarily on models that estimate a larger decline in visitation for a given fee increase, in order to minimize risk that revenues will be lower than expected or that fee increases will need to be rescinded. However, we refer to alternative models as appropriate. In all cases, final demand curves used are derived using the best multivariate model we could identify. Where appropriate, an additional dummy variable for a specific park was added and the relevant dummies for parks already in the regression were set to 0.

2.7 Revenue predictions

The final step needed to convert our understanding of demand into projections of change in revenue for TANAPA is an assessment of expected revenue at each level of potential price increase, as follows:

$$ER = (CP + FI) \times (CV \times \Delta V) - (CP \times CV)$$

Where ER is expected revenue, CP is current price, FI is fee increase, CV is current visitation, and ΔV is projected percentage change in visitation at the given fee increase level.

3. RESULTS

3.1 Descriptive information about visitors

Overall, 3,263 visitors were interviewed, of whom 75% were non-east Africa residents, 13% were Tanzanians, 10% were Expatriates and 2% were non-Tanzanian east Africans. The following sections provide more detailed information on relevant visitors' characteristics. Information on non-Tanzanian East Africans is typically not reported because they were a small fraction of the total visitors.

3.1.1 Socio economic characteristics

In terms of visitor socio-economic characteristics, the visitors surveyed were more likely to be men (60%), were most typically middle aged (35-45 years old), and had on average a first university degree or higher. Average monthly income was US \$8,400 for non-east African residents, \$5,600 for expatriates, and \$1,200 for Tanzanians. There was a large variation among respondents' reported income for all visitor types, evidenced by a large standard deviation around the average.

Detail on socio-economic characteristics is given in the following tables:

Gender

	Male	Female
Non-residents of E Africa	57%	43%
Expatriates	62%	38%
Tanzanians	75%	25%
<i>All visitors</i>	<i>60%</i>	<i>40%</i>

n=3,174

Age

	Average	Standard deviation
Non-residents of E Africa	42	15
Expatriates	39	13
Tanzanians	35	10
<i>All visitors</i>	<i>40</i>	<i>14</i>

n=3,149

Education

	High school or less	College/University or higher
Non-residents of E Africa	14%	86%
Expatriates	13%	87%
Tanzanians	36%	64%

n=3,168

Income (USD)

	Average	Standard deviation
Non-residents of E Africa	8,453	25,868
Expatriates	5,643	22,450
Tanzanians	1,174	5,603

n=1,967

3.1.2 Visitation and knowledge of the park system

In terms of visitation, non-residents of E. Africa overwhelmingly visited the Northern parks. They also had very little knowledge of the rest of the park system. Outside of the Northern parks, the most well-known parks to non-residents were Gombe and Ruaha, known by approximately 20% of respondents. Even fewer non-residents have heard of the rest of the non-northern parks. Among expatriates, the most common destinations were also northern parks, but one-third also went to the southern parks. Expatriate visitors had a much greater awareness of the non-northern parks. Tanzanian citizens primarily visited the southern parks, but also went to other regions. Tanzanians had the greatest awareness of all of the parks in the system.

Detail on visitation and knowledge of the park system is given in the following tables:

Parks visited by region⁷

	Eastern	Lake zone	Northern	Southern	Western	Total
Non-residents	1%	0	86%	11%	1%	100%
Expatriates	6%	9%	50%	32%	4%	100%
Tanzanians	8%	25%	20%	47%	1%	100%

n=3197

Non-northern parks that the visitor has heard of before

	Ruaha	Katavi	Kitulo	Udzungwa	Mkomazi	Saadani
Non-residents	18%	7%	3%	6%	5%	8%
Expatriates	68%	36%	21%	40%	25%	46%
Tanzanians	92%	81%	51%	80%	59%	74%

Non-northern parks that the visitor has heard of before (cont'd)

	Gombe	Mahale	Rubondo	Saanane	Mikumi
Non-residents	21%	11%	4%	2%	14%
Expatriates	54%	33%	23%	20%	63%
Tanzanians	71%	54%	53%	55%	90%

n=2,969

* Note: responses by visitor category do not sum to 100%; respondents responded "yes" to as many parks as they knew.

3.1.3 Knowledge and perception of the conservation fee

Non-residents of East Africa were relatively unlikely to know the conservation fee, while expatriates and Tanzanians were relatively likely to know it. Related, because of a strong correlation between residency and how travel was arranged, those who arranged their trip privately (much more likely to be Tanzanians or Expatriates) were likely to know the fee, while less than 20% of those who came on an organized tour (more likely to be non-residents) knew it. Finally, and again related, visitors to the northern parks were least likely to know the fees. The most significant determinants of knowledge about the fee are: non-Tanzanian east African residents: 20% less likely to know ($p=.06$). Non-residents of east Africa: 35% less likely to know ($p<.005$). Visitors who arranged their tour privately: 31% more likely to know ($p<.005$).⁸

Detail on the breakdown of knowledge about the fee are given in the following tables. These are descriptive statistics only, i.e., causality should not be assumed, in particular with regard to the potential impact of increasing visitors' *a priori* awareness of the fee:

By residency type

⁷ Eastern: Saadani, Mkomazi; Lake zone: Gombe, Rubondo, Mahale, Saanane; Northern zone: Serengeti, Manyara, Tarangire, Arusha, Kilimanjaro; Southern zone: Mikumi, Udzungwa, Ruaha; Western zone: Katavi, Gombe, Rubondo

⁸ Results from multivariate probit regression, described in methodology

	Know the fee	Don't know the fee
Non-residents of E. Africa	24%	76%
Expatriates	70%	30%
Tanzanians	73%	27%

n=3,172

By trip type

	Know the fee	Don't know the fee
Private	62%	38%
Group	49%	51%
Tour	19%	81%

n=3,218

By park region

	Know the fee	Don't know the fee
Eastern	75%	25%
Western	80%	20%
Southern	63%	37%
Lake zone	69%	31%
Northern	24%	76%

n=3,236

With regard to perception of the conservation fee, most people in all visitor groups perceive fees to be generally affordable. Non-residents are most likely to perceive the fee as expensive, possibly due to several factors: because the parks they tend to visit are among the more expensive; they typically come in tours and might therefore have been surprised to learn about the fee while being interviewed for this study; or they do in fact face the highest fees relative to other visitor categories. Also noteworthy is that at the park level (non-residents only) Kilimanjaro and Gombe are by far the most often seen as expensive (63% and 60%, respectively). Serengeti was seen as expensive by 37% of visitors. The rest of the northern group was seen as expensive by less than 30% of visitors.

Detail on visitors' perception of how expensive the fee is at the park visited is given in the following tables:

By residency

	Cheap	Affordable	Expensive
Non-residents	9%	62%	29%
Expatriates	14%	69%	17%
Tanzanians	18%	69%	12%

n=1,104

By trip type

	Cheap	Affordable	Expensive
Group	18%	64%	17%
Private	13%	67%	20%
Tour	10%	65%	25%

n=1,131

By park (non-residents only)

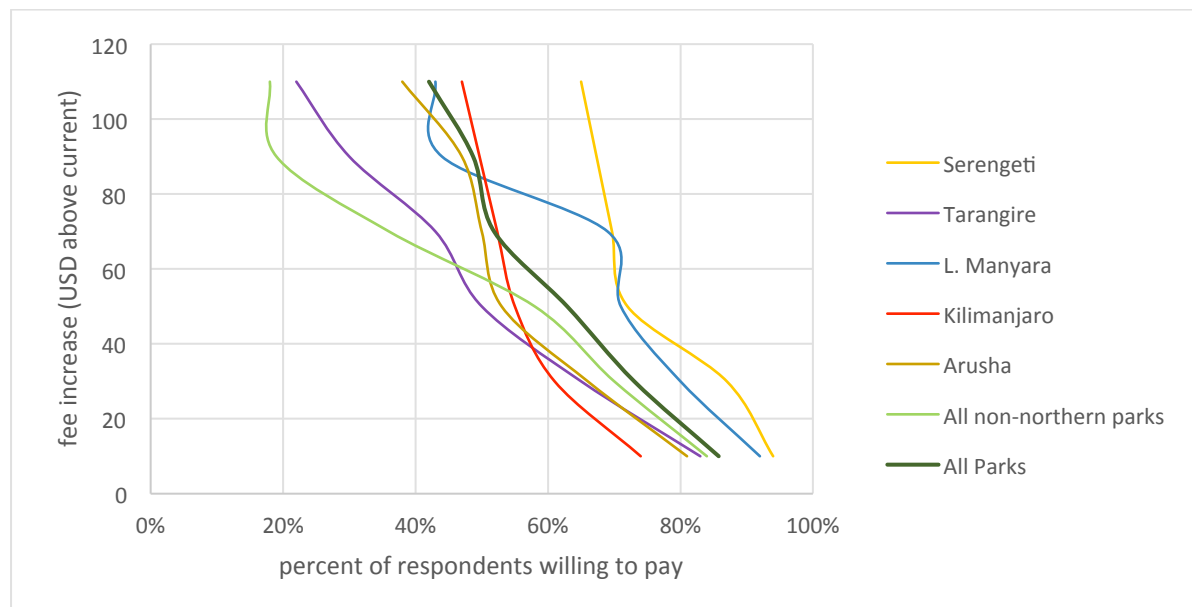
	Cheap	Affordable	Expensive	<i>n</i>
Kilimanjaro	34%	3%	63%	64
Gombe	40%	0%	60%	20
Serengeti	53%	11%	37%	95
Arusha	68%	4%	29%	108
Tarangire	74%	7%	19%	99
Udzungwa	44%	37%	19%	27
Manyara	82%	0%	18%	28
Ruaha	66%	17%	17%	29
Katavi	68%	18%	14%	22
Mikumi	74%	15%	9%	53

Note: Sample size was too small to draw conclusions in Mkomazi, Rubondo, Saadani, and Saanane

3.1.4 Willingness to pay increased fees

Data for most visitor groups and parks followed the expected pattern, i.e., decline in WTP at higher fee increase levels. The exception was that non-residents appeared to be more willing to pay a \$90 fee increase than a \$70 increase in Arusha, Serengeti, and Kilimanjaro. In the case of Kilimanjaro, non-residents were also more willing to pay \$110 than \$70. This finding may be due to limited sample size in the case of Kilimanjaro, but in all cases further exploration is merited. The adjusted distribution of responses (following the formula used to generate Turnbull WTP estimates) are presented below for non-residents (Figure 2). We note that while illustrative, these results do not represent our best estimation of the demand curve for each park. Good demand curves are presented in the following sections.

Figure 2: Distribution of Non-residents' reported willingness to pay fee increases



Among those who said they were willing to pay an increased fee, the most common reason given was contribution to wildlife conservation (93%); this was followed by simply fulfilling their interest in visiting the park (64%), and interest in contribution to tourism infrastructure (53%).⁹

Among those who said they were unwilling to pay an increased fee, financial reasons were the most common, accounting for 89% of responses.¹⁰ In particular, 48% indicated that their trip costs were already high enough, and 41% indicated that the fee increase itself was too high. A further 2.9% did not trust that the money would be used appropriately, 2.5% indicated that they did not have enough information to respond, and 1.6% believed that paying for management was not tourists' responsibility. The remaining 4% indicated either that they would prefer to go somewhere else if fees increased, or gave a written "other" reason.

We removed from the analyses of demand the "do not trust" and "not enough information" groups as protest votes, i.e., not likely representative of a true unwillingness to pay increased fees.

3.2 Models of likelihood of paying additional fees

3.2.1 Univariate model

Univariate results were as expected for all groups, with amount of the proposed increase having a negative relationship to percent of visitors willing to pay ($p < 0.001$). Full model outputs are shown in Annex 3.

Calculations of marginal effects predict that for the average visitor, a US\$1 increase in fee will decrease likelihood of paying (i.e., demand) as follows:¹¹

- Non-residents: 0.45% decrease
- Expatriates: 0.82% decrease
- Tanzanians: 4.72% decrease

3.2.2 Multivariate model

Non-residents: We first tested all variables together in a multivariate probit model. We then removed two variables: whether the respondent planned the trip as part of a tour, and marital status, because a correlation test showed each of them to be highly correlated with another explanatory variable (correlation $> .5$; probability of correlation due to random variation < 0.05). Re-running the regression without these variables resulted in significant relationships between the following variables and willingness to pay: amount of fee, age, belonging to or contributing to an environmental organization, how the trip was arranged, and whether the respondent knew the entrance fee beforehand. All relationships were in accordance with *ex ante* expectation (Table 2, above).

When dummy variables were included for parks most visited by this visitor group (Serengeti, Kilimanjaro, Lake Manyara, Arusha and Tarangire) and for the southern region, we found significant relationships between three of these variables and willingness to pay: Serengeti (positive relationship), Tarangire (negative relationship), and the southern parks group (negative relationship). Inclusion of park specific effects made coefficients on several additional variables insignificant, implying that those relationships were better explained by the choice to visit a

⁹ Responses in this category of questions do not sum to 1, because participants were asked to rank their agreement with all three reasons separately.

¹⁰ Responses in this category of questions do sum to 1, because participants were asked to select among 6 possible explanations.

¹¹ These values are refined below in cases where a good multivariate model can be identified

particular park. Model outputs are given in Annex 4, with marginal effect of significant relationships shown in Table 4.

Of note, the coefficient on amount of fee increase did not change significantly across multiple model specifications, indicating that findings regarding sensitivity of demand to price are robust.

Expatriates: In the case of expatriates, the model was much simpler. An initial regression with all explanatory variables proposed found only one to be significant: whether or not the respondent belonged to or contributed to an environmental organization. In this case, the relationship between willingness to pay and environmental organization was the opposite of our *ex ante* expectation. Relevant marginal effects are given in Table 4. Model outputs are given in Annex 4.

Tanzanians: For Tanzanians, a satisfactory multivariate model could not be defined (i.e., we could not identify any particular characteristics associated with increased or decreased likelihood of willingness to pay). We therefore present and make inferences about demand from the univariate model described in section 3.2.1 above.

Table 4: Variables with a significant effect on willingness to pay; scope of effect is given for the average visitor

Variable	Marginal effect	Probability	Interpretation
NON RESIDENTS OF EAST AFRICA			
Additional fee amount (USD)	-0.005	P<.001	Each dollar increase in fee reduces percent of people who would be willing to pay by 0.5%
Age	0.003	P<.001	Each year of additional age makes a visitor 0.3% more likely to be willing to pay
Knows the entrance fee	-.193	P<.001	Visitors who know the entrance fee are 19.3% less likely to be willing to pay
Serengeti	.175	P<.001	Visitors to Serengeti are 17.5% more likely to be willing to pay
Tarangire	-.117	P<.001	Visitors to Tarangire are 11.7% less likely to be willing to pay
EXPATRIATES			
Additional fee amount (USD)	-.009	P<.001	Each dollar increase in fee reduces percent of people who would be willing to pay by 0.9%
Contributes to environmental organization	-.16	P<.01	Expatriates who contribute or belong to environmental organizations are 16% less likely to pay
TANZANIANS			
Additional fee amount (USD)	-.047	P<.001	Each dollar increase in fee reduces percent of people who would be willing to pay by 4.7%

3.3 Average Willingness to Pay

Table 5 gives the results of WTP calculated using the three methodologies described. Also provided is the lower bound WTP estimate as a percentage of the respondent group's average reported

monthly income to permit comparison between groups. Calculation of Turnbull WTP estimates is given in Annex 5.

Table 5: Willingness to pay (all parks as a group, US\$)

	Turnbull (lower bound)	Univariate parametric	Multivariate parametric	Lower bound WTP as a % of average monthly income
Non-residents of E. Africa	66	87	86	0.8%
Expatriates	41	47	47	0.7%
Tanzanians	6	8	NA	0.5%

Data for non-residents were sufficient to permit an estimation of WTP at the park level for northern parks individually, as well as to distinguish patterns for the southern parks as a group. Estimates are given in Table 6. Parametric estimates are from a simplified model containing only the payment amount and a dummy variable for the specific park or group of parks in question.

Table 6: Non-residents average willingness to pay by park

	Turnbull (lower bound)	Parametric
Serengeti	80	123
Lake Manyara	71	99
Kilimanjaro	60	82
Arusha	55	76
Tarangire	52	61
Southern parks	50	58

While informative, average WTP is not the best information for setting fees. However, it does permit an estimate of consumer surplus to park visitors. Multiplying the non-resident lower bound additional WTP by the five year average number of foreign visitors and length of stay gives a conservative estimate. For Serengeti, consumer surplus (CS) is in excess of \$34 million/year (\$80 x 172,000 annual visitors X 2.5 days average stay). For Kilimanjaro, CS is in excess of \$16 million/year (\$59 x 55,000 annual visitors x five days). Using the Southern parks value of WTP as a conservative estimate for the rest of the park system and, again to be conservative, using one day as the average length of visit, CS for the rest of the system is in excess of \$14 million/year (\$48 x 292,000 annual visitors x one day). Conservatively then, the value of Tanzania's parks to foreign tourists, *above* what they currently spend, is greater than \$66 million / year.

3.4 Demand

3.4.1 Price sensitivity

Price elasticity for non-residents is shown in Table 8.¹² Serengeti stands out as having visitors least likely to leave if the price is increased (decline of .28% in visitation at a 1% price increase). At the other extreme, a 1% fee increase in Tarangire is predicted to cause a decline in visitation of approximately .6%.

¹² Elasticity is assumed to be constant here

Table 8: Price elasticity of demand among non-residents

	Elasticity
Serengeti	-0.28
Manyara	-0.43
Kilimanjaro	-0.44
Average	-0.44
Arusha	-0.49
South	-0.54
Tarangire	-0.61

Elasticities at the park level for Tanzanians and expatriates could not be calculated due to the small sample size. However, in both cases, considering all parks visited as a group, a linear demand model appeared to better fit the data. Accordingly, the marginal effects reported earlier provide the most reasonable means of comparing price sensitivity between these groups and non-residents. At the relevant mean fee levels, a price increase of one dollar would decrease demand among non-residents by .5% would decrease demand among expatriates by .9% and among Tanzanians by 4.72%.

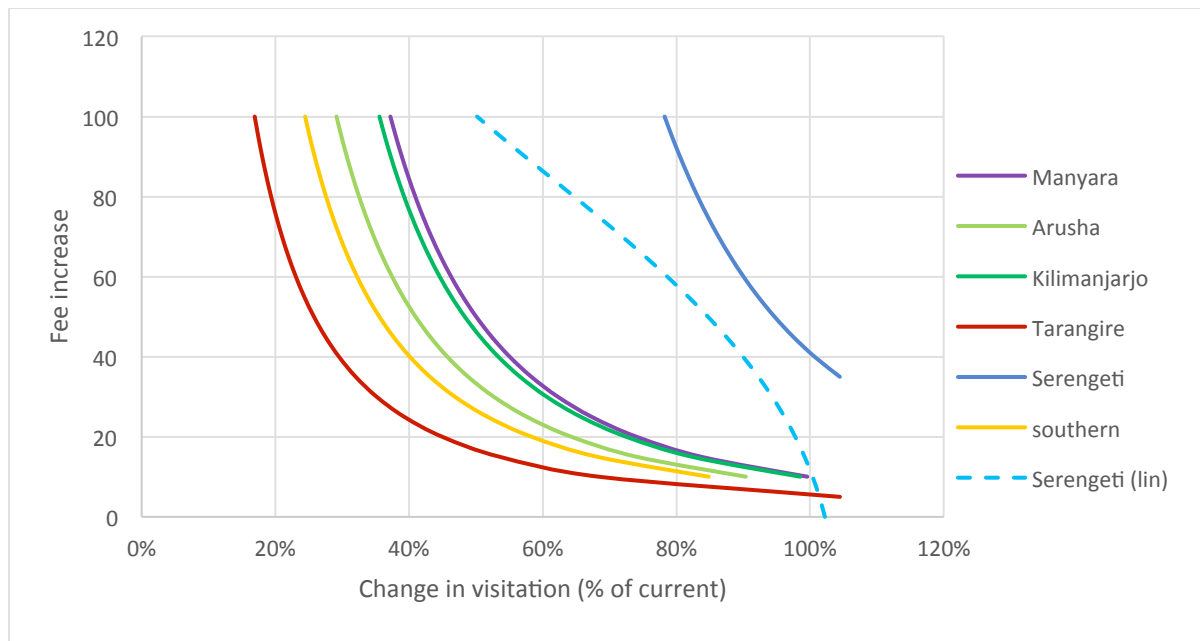
3.4.2 Demand curves

Non-residents

Econometric tests were inconclusive with regard to whether exponential demand or linear demand curves better fit the data. However, exponential demand curves have the advantage of better capturing differences between parks, and in addition, predict demand according to a form commonly observed in the market. Further, they make more conservative predictions of the returns to fee increases – forecasting larger visitation declines as fees begin to increase – in all cases except for Serengeti. They are therefore well suited to minimizing the risk that revenues would be less than expected at reasonable fee increase levels, or that fee increases would need to be rescinded. For these reasons, our primary model of demand for non-residents is exponential. However, we also include and where appropriate make use of the linear model of demand, in particular for Serengeti (Figure 3).¹³

¹³ Because marginal effects are recalculated at each fee level, “linear” demand (i.e., generated by a linear model) can take non a non-linear form, as is the case here

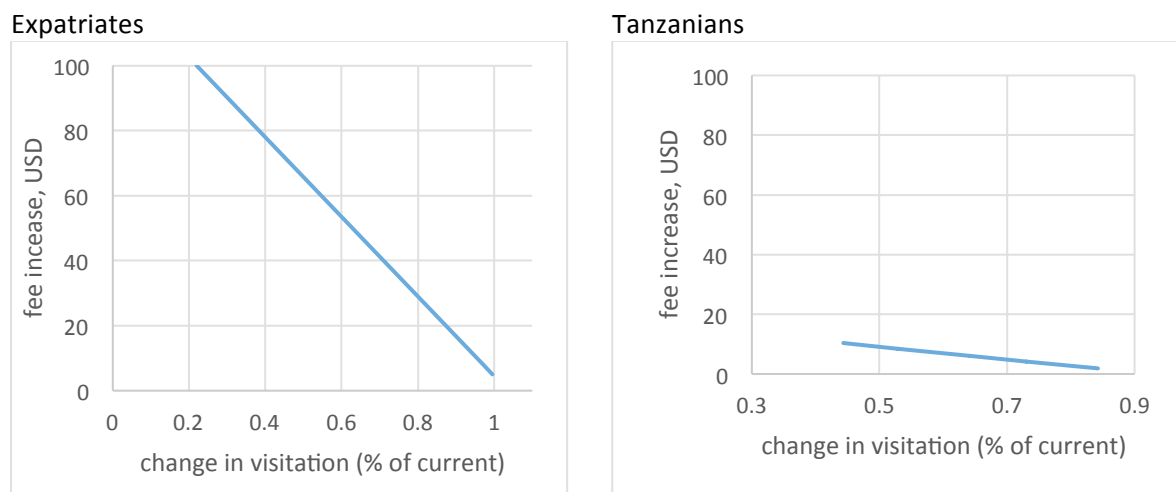
Figure 3: Demand curves for non-residents



Expatriates and Tanzanians

For Expatriates and Tanzanians, demand is shown in Figure 4. Only the linear model is used here because the exponential model did not fit the data well:¹⁴

Figure 4: Demand curves for Expatriates and Tanzanians, all parks

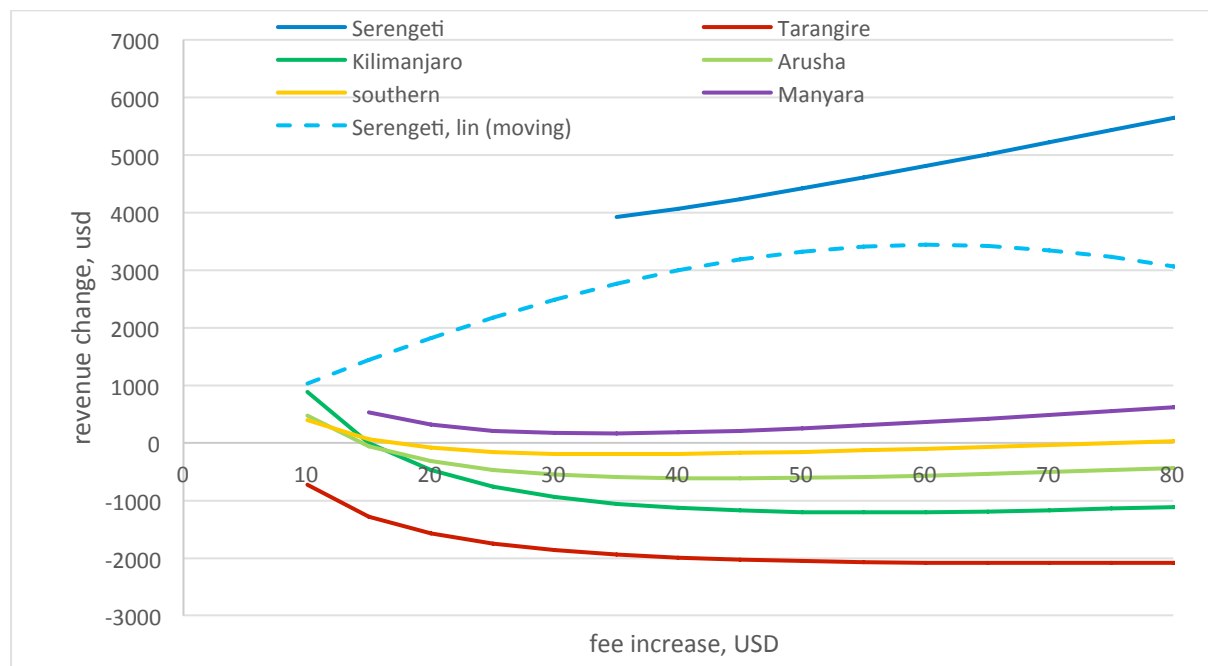


3.5 Revenue Projections

Revenue projections for the non-resident group are given in Figure 6, showing results from both linear ("Serengeti, lin") and exponential ("Serengeti, exp") demand for Serengeti.

¹⁴ The simplifying assumption that marginal effects calculated at the mean apply to the entire curve is used

Figure 6: Net revenue change per 100 current visitor days (non-residents only)



Two results stand out:

- 1) In Serengeti, major fee increases are projected to significantly and unambiguously increase revenues, with revenue maximization at \$60 under the linear model, and under the exponential model continuing to grow at fee increase levels beyond the scope of those assessed here.
- 2) Small price increases appear likely to generate additional revenue in Lake Manyara, Kilimanjaro, the Southern Parks, and Arusha. However, revenue losses appear likely at higher fee increases. Accordingly, caution is merited in drawing conclusions for this group of parks, as described below.

As it was not possible to disaggregate a demand curve by park for expatriates and Tanzanians, projections were not made for this group.

3.6 Recommendations regarding fee adjustments

3.6.1 Non-residents

Serengeti: Serengeti shows the highest average willingness to pay per visitor, and the lowest price sensitivity of all parks analyzed. Percentage of visitors saying they would not pay a \$10 increase was also the lowest (6%) of any park assessed. A full 66% percent of visitors continue to see the Park as affordable, and while there is a relationship between this perception and willingness to pay a fee increase, it is reasonable to believe that even if Serengeti were perceived as expensive, it would continue to draw visitors due to its status as a unique global destination. Finally, due to overcrowding at the main entrance gate and some other choke points, some decrease in visitation is potentially a desirable target on its own. Accordingly, a significant fee increase is seen low risk, and likely to greatly increase revenue. We put “significant increase” at \$60, noting that revenues are

maximized far above that level under a less conservative model of demand. Such an increase would likely reduce visitation to perhaps 79% of current levels, and generate an additional \$8,600 per 100 current visitors (considering 2.5 day average stay), equivalent to a 57% increase in revenues from the Park.

The practicality of implementing a large fee increase requires consideration of other criteria as well. These include the need to work with stakeholders to accommodate changing fee structure, lack of high season data, and perception issues in particular related to reducing fees if predictions of visitors' behavior is wrong. With these in mind, we recommend a planned and transparent stepwise approach towards a major increase. An appropriate rate of increase would be perhaps \$20 every period until a satisfactory price level is reached. This approach would permit TANAPA to monitor visitors' actual reaction to fee changes and ensure that increased revenues are efficiently planned for and put to use in TANAPA's management efforts.

Taking five-year average foreign visitation rates to Serengeti as indicative (172,000 visitors, average stay of 2.5 days), such an approach would generate *additional* revenues for TANAPA greater than:

- 2016: \$7.8 million/year
- 2018: \$12.9 million/year
- 2020: \$14.8 million/year

Kilimanjaro: Visitors to Kilimanjaro ranked the park as expensive more often than visitors to any other park (63%). Distribution of survey results showed a comparatively large percentage of people (25%) unwilling to pay a \$10 increase, indicating existing sensitivity to price. Projected losses at most fee increase levels are significant. Combining these findings with the fact that visitation has been declining in the past few years, we recommend that rates not be changed at Kilimanjaro. We do note, however, the comparatively high percentage of visitors (47%) who indicated they would be willing to pay a huge increase (\$110/day). The characteristics of this group of visitors should be explored more. We again note small sample size, and that different findings may emerge with a larger sample.

Other northern parks: The information we have is more ambiguous with respect to the rest of the northern parks. The exponential demand model we chose suggests that price increases may be risky, certainly for Tarangire, and probably for Arusha.

On the other hand:

- Fee increases for Lake Manyara appear likely to increase revenue
- Alternative, linear estimations of demand predict that fee increases could increase overall revenues from the parks in this group;
- Experience to date is that relatively small bi-annual fee increases have not affected visitation levels;
- Most visitors perceive that conservation fees in this group are either affordable or cheap; and
- Substantial price rises at Serengeti may make alternative parks in the North attractive substitutes.

We therefore believe it would not be unduly risky to repeat the current practice of small bi-annual increases for non-resident visitors, with the exception of Tarangire. A bi-annual increase of \$5 would keep fee levels roughly constant in real terms (i.e., accounting for an estimated 5% inflation in

Tanzania), while still representing a small increase to visitors whose home country inflation in recent years is typically somewhat lower.

Southern parks: Raising fees in the Southern parks appears like to be at best neutral in terms of revenue generated. Given this and the strategic importance of increasing visitation to the South, we recommend not changing fees for this group of parks.

3.6.2 Expatriates

Revenue projections from fee changes could not be made for expatriates due to data limitations. However, expatriates are shown to have a much higher sensitivity to price than non-residents. Furthermore, the percentage of visitation and therefore total TANAPA revenue made up by expatriates is relatively small. While we see value in maintaining the clarity of the current expatriate pricing policy (50% of the non-residents' fee), TANAPA is likely to see a decline in expatriate visitation if it raises fees.

Should TANAPA choose to raise fees in Serengeti only, our recommendation is simple: keep the current formula and increase expatriate fees by 50% of the fee for foreigners. Such an approach has the benefits of preserving the clarity of the existing policy. Furthermore, expatriates visit a far wider range of parks than do non-residents, and are well aware of substitutes to Serengeti. If a fee increase in Serengeti alone does in fact dissuade expatriates from visiting, and they instead visit other parks, this would both reduce crowding at Serengeti and increase visitation elsewhere, both desirable goals.

Should TANAPA choose to raise fees in other the Northern parks, our recommendation is less clear-cut. TANAPA will need to balance clarity and consistency on the one hand, with a likely decline in visitation by expatriates to the northern parks on the other. The authors incline towards maintaining the current policy for the purposes of clarity, and because expatriates are comparatively well-suited to substitute their visitation to parks outside of the northern circuit. Appropriate policies to encourage such substitution might be valuable in this regard.

3.6.3 Tanzanians

Again, it was not possible to model park specific demand and therefore revenue implications of fee change on Tanzanians. However, we believe that the social and political importance of encouraging Tanzanian visitation to the parks through fee level choices should be paramount. Even if Tanzanian visitors would tolerate some fee increase, revenue implications would be negligible.

3.6.4 High Season data

A notable gap in information in this study relates to having gathered data only in the low season. High-season visitors might differ significantly in their demand. Accordingly, gathering high season data is recommended to both shore up datasets for important parks in the current survey, and ensure that results are not too different.

3.7 Final thoughts and next steps

This report studied price sensitivity of visitors to Tanzania's national parks. We found scope for significant increases in revenues by increasing prices, most unambiguously for non-residents visiting Serengeti National Park. In actual implementation, the impact of this price increase on visitation will

depend not only on amount, but on how the increase is described. This issue was not studied here, but we venture several thoughts:

- Multiple studies (e.g., Kahneman et al., 1986) have shown that buyers perceive price increases driven by increased costs faced by producers to be far more fair than cost increases due to higher demand or (even worse) taking advantage of market power. While the extent to which this finding applies to tourists is unknown, it suggests that a fee increase would be better received by visitors if TANAPA made clear that it was needed to cover increases in management costs, including those driven by inflation. This in contrast, for instance, to suggesting that the fee increase is because Serengeti is a world class resource than cannot be seen anywhere else.
- Visitors willing to pay a fee increase were overwhelmingly interested in conservation. TANAPA could make clear publically (signs at the entrances, website, etc.), that the direct purpose of fees is to support conservation efforts, and provide suitable supporting facts. Such communications would seem likely to increase visitor acceptance of any fee change.

Should TANAPA wish to study any of these issues in more detail, visitors could be surveyed to better understand their reaction to different forms of messaging, and the lessons learned used to inform communications around future fee increases.

Acknowledgements

Financial support for this study was provided by TANAPA and by a grant from the Handsel Foundation.

We recognize TANAPA's Director General, Allan Kijazi, for leadership and vision in launching this study. Additionally, we thank John Reid, Rafael Cuervo Sánchez, and Kim Bonine for technical support and helpful discussions.



We further note the fundamental contribution of the study's enumerators, who diligently collected data in the field.

Finally, we thank IUCN's Washington DC office for providing meeting space used during the study's design and planning stages.

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Annex 1: Survey

Visitor Survey																																																					
																																																					
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Date: D ___ M ___ Year _____			Start time: ___:___ (24hours)			Name of entry point: _____																																															
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d. It is important to protect Tanzania's parks even if tourists will never visit them																																																					
3. When planning this trip, how many people did you budget for, including yourself? _____ (number) <i>If only 1, → skip to question 5</i>																																																					
4. Please tell me which of the previous categories best describes each of these other people, <i>not</i> including yourself? (number in each box)																																																					
	Tzcitiz	E. Africa	Non-E. Af	TZ Expat																																																	
16 +																																																					
5 – 15																																																					
Under 5																																																					
5. Why did you choose to visit this park? Please tell me the top 3 reasons, in order of importance mark 1, 2, 3																																																					
a. big 5 <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
b. rare species <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
c. natural history / scenic beauty <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
d. ease of access <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
e. cost <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
f. other (specify) _____ <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table>																																																					
6. How did you arrange your trip? (✓)					11. Do you know the entrance fee for this park?(✓)																																																
a. Tour operator/travel agent <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		yes <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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b. Organized group <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		No <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>2</td><td></td></tr></table> → <i>If no, skip to</i>					2																																									
1																																																					
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c. Private <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		CURRENT SCENARIO																																														
1																																																					
7. During this trip, have you visited or will you visit other parks, game reserves, or conservation areas in Tanzania?(✓)					12. Kindly rate the entrance fee for this Park (✓)																																																
Yes <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table> No <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>2</td><td></td></tr></table> → <i>If no, skip to Q9</i>					1		2		a. Very cheap <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																							
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					c. Affordable <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																											
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					d. Expensive <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																											
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					e. Very expensive <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																											
1																																																					
8. Which areas? (<i>Don't read them, just ✓ or name</i>)					CURRENT SCENARIO (enumerator: 2)																																																
a. Arusha <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		13. In your opinion, what is the most important value provided by our parks?(✓) (<i>Don't read the options</i>)																																														
1																																																					
b. Kilimanjaro <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		a. wildlife conservation <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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c. Serengeti <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		b. tourism <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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d. Tarangire <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		c. clean air and water <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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e. Lake Manyara <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		d. jobs and foreign exchange <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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f. Ruaha <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		e. local community development <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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g. Katavi <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1		f. other _____ <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																									
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i. Udzungwa <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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j. Mkomazi <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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k. Saadani <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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l. Gombe <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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m. Mahale <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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n. Rubondo <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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o. Saanane <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr></table>					1																																																
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<p>h. Kitulo <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr><tr><td>1</td><td></td></tr></table> p. Mikumi <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr><tr><td>1</td><td></td></tr></table></p> <p>q. _____ <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr><tr><td>1</td><td></td></tr></table> r. _____ <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td></td></tr><tr><td>1</td><td></td></tr></table></p>	1		1		1		1		1		1		1		1		<p>VALUATION SCENARIO(Enumerator: 3)</p>																			
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<p>14. Do you have any questions about what I have described for you so far? (<i>No need to record</i>)</p> <p>VALUATION QUESTION (Enumerator: 4)</p>	<p>24. What is your marital status?(✓)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. Single</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. Married</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>c. Widowed</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>d. Divorced</td><td style="text-align: center;">1</td><td></td></tr> </table>	a. Single	1		b. Married	1		c. Widowed	1		d. Divorced	1																								
a. Single	1																																			
b. Married	1																																			
c. Widowed	1																																			
d. Divorced	1																																			
<p>15. Would you be willing to pay an additional _____ (USD or TZS) in the per adult daily entrance fee for this park?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100px;">yes</td> <td style="width: 50px; text-align: center;">1</td> <td style="width: 50px;"></td> <td style="width: 100px;">No</td> <td style="width: 50px; text-align: center;">2</td> <td style="width: 50px;"></td> </tr> </table>	yes	1		No	2		<p>25. Which of the following describes your highest level of education?(✓)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. No formal education</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. Primary</td><td style="text-align: center;">2</td><td></td></tr> <tr><td>c. Secondary/high school</td><td style="text-align: center;">3</td><td></td></tr> <tr><td>d. University</td><td style="text-align: center;">4</td><td></td></tr> <tr><td>e. Graduate degree or higher</td><td style="text-align: center;">5</td><td></td></tr> </table>	a. No formal education	1		b. Primary	2		c. Secondary/high school	3		d. University	4		e. Graduate degree or higher	5															
yes	1		No	2																																
a. No formal education	1																																			
b. Primary	2																																			
c. Secondary/high school	3																																			
d. University	4																																			
e. Graduate degree or higher	5																																			
<p>16. On a scale of 1-6, where 6 is "very sure", and 1 is "very unsure," how sure are you about your answer to the previous question (q15?)(✓)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100px;">1</td> <td style="width: 100px;">2</td> <td style="width: 100px;">3</td> <td style="width: 100px;">4</td> <td style="width: 100px;">5</td> <td style="width: 100px;">6</td> <td style="width: 100px;">DK</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	1	2	3	4	5	6	DK								<p>26. Which of the following best describes your primary occupation?(✓)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. Work</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. student</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>c. look after home</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>d. retired</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>e. unemployed</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>f. unable to work</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>g. other</td><td style="text-align: center;">1</td><td></td></tr> </table>	a. Work	1		b. student	1		c. look after home	1		d. retired	1		e. unemployed	1		f. unable to work	1		g. other	1	
1	2	3	4	5	6	DK																														
a. Work	1																																			
b. student	1																																			
c. look after home	1																																			
d. retired	1																																			
e. unemployed	1																																			
f. unable to work	1																																			
g. other	1																																			
<p>17. <i>Only for answers of "NO" on q15; What is the main factor influencing your decision ?(✓) (don't read these)</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. fee increase too high</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. Trip costs already high enough</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>c. Don't trust that money will be used appropriately</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>d. Not tourists' responsibility</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>e. not enough info. to respond</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>f. prefer to go somewhere else</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>g. other (spec): _____</td><td style="text-align: center;">1</td><td></td></tr> </table> <p><i>Go to q19</i></p>	a. fee increase too high	1		b. Trip costs already high enough	1		c. Don't trust that money will be used appropriately	1		d. Not tourists' responsibility	1		e. not enough info. to respond	1		f. prefer to go somewhere else	1		g. other (spec): _____	1		<p>27. If you work, what is your profession?</p> <p>_____</p>														
a. fee increase too high	1																																			
b. Trip costs already high enough	1																																			
c. Don't trust that money will be used appropriately	1																																			
d. Not tourists' responsibility	1																																			
e. not enough info. to respond	1																																			
f. prefer to go somewhere else	1																																			
g. other (spec): _____	1																																			
<p>18. <i>Only for answers of "YES" on q15; On a scale from 1-6, where 6 is "very important" and 1 is "not important at all" how much did you weigh the following in your decision:</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 100px;"></td> <td style="width: 50px; text-align: center;">1</td> <td style="width: 50px; text-align: center;">2</td> <td style="width: 50px; text-align: center;">3</td> <td style="width: 50px; text-align: center;">4</td> <td style="width: 50px; text-align: center;">5</td> <td style="width: 50px; text-align: center;">6</td> <td style="width: 50px; text-align: center;">DK</td> </tr> <tr> <td>a. Contribution to wildlife conservation</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>b. Contribution to infrastructure for tourism</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>c. Fulfil your interest in visiting the park</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>		1	2	3	4	5	6	DK	a. Contribution to wildlife conservation								b. Contribution to infrastructure for tourism								c. Fulfil your interest in visiting the park								<p>28. Can you please estimate your total household <u>monthly</u> income before tax? _____; please be assured that this information is for statistical use only and is completely anonymous. Confirm currency _____</p> <p>29. What is your Nationality? _____</p>			
	1	2	3	4	5	6	DK																													
a. Contribution to wildlife conservation																																				
b. Contribution to infrastructure for tourism																																				
c. Fulfil your interest in visiting the park																																				
<p>19. If a fee increase exceeded the maximum you are willing to pay, what would you do instead?(✓) (<i>don't read these</i>) (<i>specify where appropriate</i>)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. Go to another park in Tanzania _____</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. Go to another country: _____</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>c. not travel</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>d. other: _____</td><td style="text-align: center;">1</td><td></td></tr> </table>	a. Go to another park in Tanzania _____	1		b. Go to another country: _____	1		c. not travel	1		d. other: _____	1		<p>30. Finally, what did you think of this questionnaire?(✓ <i>all that apply</i>)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>a. Interesting</td><td style="width: 50px; text-align: center;">1</td><td style="width: 50px;"></td></tr> <tr><td>b. too long</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>c. difficult to understand</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>d. unrealistic</td><td style="text-align: center;">1</td><td></td></tr> <tr><td>e. Other. Specify: _____</td><td style="text-align: center;">1</td><td></td></tr> </table>	a. Interesting	1		b. too long	1		c. difficult to understand	1		d. unrealistic	1		e. Other. Specify: _____	1									
a. Go to another park in Tanzania _____	1																																			
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e. Other. Specify: _____	1																																			
<p><i>Read this:</i> This is the last part. I am now going to ask you some questions about yourself and your family.</p> <p>20. Respondent's gender (✓) <i>no need to ask, just fill it in</i></p>	<p>31. Do you have any comments or questions you would like to ask me?(<i>no need to record</i>)</p> <p>(<i>after answering questions</i>) Thank you very much for your time. I'd like to give you this letter of appreciation on behalf of Tanzania National Parks. Please enjoy the rest of your trip!</p>																																			

male	1		female	0	
------	---	--	--------	---	--

21. Do you belong to or contribute to an environmental organization or club?(✓)

yes	1		no	2	
-----	---	--	----	---	--

If yes: which one: _____

22. Including yourself, how many people live in your household? _____ (number)

23. In what year were you born?(write year) _____

Enumerator only:
End time: __:____ (24hours)
Day of week:
Notes

Annex 2: Enumerators' Guide

Procedure:

Before the survey

- surveys are to be conducted at the assigned location and on the assigned day(s), from 8AM to 6 PM
- It is acceptable to take a break of 5 minutes between interviews. Upon completion of the break, the interviewer should interview the next tourist to enter. Only 1 person per group is interviewed.
- surveys are to be conducted prior to visitors entering the park, not afterwards
- complete information at the top of the survey form prior to beginning questions
- Select the survey for the appropriate visitor category of the person being surveyed (i.e., E. African resident or Non E. African resident; foreign expatriates living in Tanzania receive the _____ survey).
- Practice and own all of the statements below so they sound natural, but be sure to say the exact statement during the interview

During the survey

- all italicized text and bold text in survey is for enumerators' guidance only and is not to be read aloud
- Where italicized text states "enumerator: 1" or any number, read the corresponding text on this document
- in space provided for answers, provide ✓, number, or specific written answer or, as indicated

After the survey

- after finishing the interview, hand the visitor the certificate of appreciation
- complete the information at the end of the form
- return the completed survey to the collection bin

If you have questions at any time, contact

Beatrice Kessy

Senior Park Warden

beatricekessy@tanzaniaparks.com

0786 36 88 33

Text to read as indicated in the interview

1. **CONTEXT** "Hello. My name is _____. I work for TANAPA, the government agency that manages Tanzania's Parks. "

If at airport, add "Are you on your way to one of our national parks?" If yes, continue; ask "which park? If no, thank the person for their time and do not continue

"We are conducting an official visitor survey to better understand tourism to our parks.

Answers you give will be completely anonymous, and will not affect your visit in any way. The survey should take no more than 15 minutes.

I'd like to confirm first that you have not yet participated in this survey at another park" *if they have done it already, thank them and let them go. If not, continue.*

"I'd like to start by asking you a bit about your trip"

Go to question 1

2. **CURRENT SCENARIO** "I am going to tell you briefly about Tanzania's parks. We have 16 parks in total, covering almost 6% of the country. These parks conserve wildlife, offer world class tourism opportunities, provide clean water and air, and are an important source of jobs and foreign exchange. Further, our parks support local community development projects in education, health, and infrastructure. Here are some pictures of the attributes I just mentioned" *Show a page of pictures with these things*

Our park management is entirely funded by tourism activities through entrance and other fees. Entrance fees for adults range from 30 – 100 USD per day for non-East African residents, and from 5,000-10,000 TZS for residents of East African countries. Five parks - Kilimanjaro, Serengeti, Tarangire, Lake Manyara, and Arusha - generate 90% of TANAPA's total revenue. This revenue is shared across all 16 parks to try to best achieve our conservation and development goals.

The National Parks also face several challenges. These include including wildlife poaching, habitat destruction and boundary conflicts. Here are some pictures of the challenges I just mentioned"

Show a page of pictures with these things

Go to question 13

3. **VALUATION SCENARIO** “Thank you. To improve management of this park and the park system as a whole, TANAPA is considering changes to its entrance fees. We estimate that our current annual budget is about 65% of the total needed to effectively manage the 16 parks. Increased entrance fees would allow us to significantly increase patrols and improve the health of wildlife populations, as well as provide a visible improvement to roads, campsites and other park infrastructure.

Go to question 14

4. **VALUATION QUESTION** “Please consider the following question. I’d like to ask you to think seriously about it before answering.

Taking into account

- a. Your income;
- b. The amount spent on this type of trip;
- c. That fees go to TANAPA for management of the park system;
- d. That fees are per person per day, with youths ages 5 to 15 paying 40% or less of the adult fee; and
- e. That any additional expense would represent money not available for other things you might wish to buy;
- f. That if fees increase, they would affect all people visiting the parks

Bearing in mind that that your answer will inform policy, please be as sincere as possible in your response.”

Go to Question 15

Annex 3: Univariate regression model outputs (probit of the decision to pay on additional fee level, heteroskedacity robust standard errors)

Non-Residents:

```

Probit regression                               Number of obs   =       2380
                                                Wald chi2(1)    =       222.22
                                                Prob > chi2     =       0.0000
Log pseudolikelihood = -1456.4667             Pseudo R2      =       0.0714
    
```

pay	Robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
usd_adl_fee	-.0120518	.0008085	-14.91	0.000	-.0136364	-.0104673
_cons	1.05156	.0553904	18.98	0.000	.9429969	1.160123

```

Marginal effects after probit
y = Pr(pay) (predict)
= .640367
    
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
usd_ad~e	-.0045072	.0003	-14.90	0.000	-.0051 - .003914	57.4286

Expatriates

```

Probit regression                               Number of obs   =       309
                                                Wald chi2(1)    =       64.93
                                                Prob > chi2     =       0.0000
Log pseudolikelihood = -174.55375             Pseudo R2      =       0.1812
    
```

pay	Robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
usd_adl_fee	-.020671	.0025654	-8.06	0.000	-.025699	-.015643
_cons	.9764337	.1472141	6.63	0.000	.6878994	1.264968

```
. mfx
```

```

Marginal effects after probit
y = Pr(pay) (predict)
= .44800582
    
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
usd_ad~e	-.0081764	.00101	-8.13	0.000	-.010146 - .006206	53.5599

Tanzanians

```

Probit regression
Log pseudolikelihood = -258.02987
Number of obs = 405
Wald chi2(1) = 30.86
Prob > chi2 = 0.0000
Pseudo R2 = 0.0587

```

pay	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
usd_adl_fee	-.1219643	.0219557	-5.56	0.000	-.1649968	-.0789319
_cons	.9665764	.1480399	6.53	0.000	.6764235	1.256729

```

.
. mfx

```

```

Marginal effects after probit
y = Pr(pay) (predict)
= .59620257

```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
usd_ad~e	-.0472351	.0085	-5.56	0.000	-.063895 - .030575	5.92834

Annex 4: multivariate probit outputs (form as noted in text)

Non-residents, with park specific dummy variables

```

Probit regression                               Number of obs   =       2260
                                                Wald chi2(10)  =       366.57
                                                Prob > chi2    =       0.0000
Log pseudolikelihood = -1286.7572             Pseudo R2      =       0.1356
    
```

pay	Robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
usd_adl_fee	-.0134656	.0008652	-15.56	0.000	-.0151614	-.0117698
age	.0067954	.0020745	3.28	0.001	.0027294	.0108615
male	.0824991	.0587002	1.41	0.160	-.0325511	.1975493
belong_env	.0959805	.0648155	1.48	0.139	-.0310555	.2230166
trip_private	-.0539306	.0743822	-0.73	0.468	-.1997171	.0918559
been_tz_before	-.0962561	.0725175	-1.33	0.184	-.2383877	.0458756
know_entrance_fee	-.5057908	.0713555	-7.09	0.000	-.645644	-.3659376
educ_lev	-.0311265	.0420928	-0.74	0.460	-.113627	.0513739
serengeti	.5020937	.0748099	6.71	0.000	.3554689	.6487184
tarangire	-.3070155	.070749	-4.34	0.000	-.445681	-.16835
_cons	1.022102	.1973657	5.18	0.000	.6352718	1.408931

. mfx

```

Marginal effects after probit
y = Pr(pay) (predict)
= .65084368
    
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
usd_ad~e	-.0049833	.00032	-15.61	0.000	-.005609	-.004358
age	.0025148	.00077	3.28	0.001	.001011	.004019
male*	.0305962	.02181	1.40	0.161	-.012144	.073336
belong~v*	.0352491	.0236	1.49	0.135	-.011014	.081512
trip_p~e*	-.0200709	.02784	-0.72	0.471	-.074627	.034485
been_t~e*	-.0359614	.02733	-1.32	0.188	-.089533	.01761
know_e~e*	-.1933593	.02763	-7.00	0.000	-.247503	-.139215
educ_lev	-.0115191	.01558	-0.74	0.460	-.042047	.019009
sereng~i*	.174752	.02399	7.28	0.000	.127729	.221775
tarang~e*	-.1165999	.02734	-4.26	0.000	-.170189	-.063011

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Expatriates

```

Probit regression                               Number of obs   =       304
                                                Wald chi2(2)    =       67.04
                                                Prob > chi2    =       0.0000
Log pseudolikelihood = -167.77589             Pseudo R2      =       0.1996
    
```

pay	Robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
usd_adl_fee	-.0216964	.0026935	-8.06	0.000	-.0269755	-.0164173
belong	-.4148476	.1735737	-2.39	0.017	-.7550459	-.0746493
_cons	1.133194	.1657978	6.83	0.000	.8082368	1.458152

. mfx

```

Marginal effects after probit
y = Pr(pay) (predict)
= .44316163
    
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
usd_ad~e	-.0085676	.00105	-8.14	0.000	-.01063	-.006505
belong*	-.1601801	.06488	-2.47	0.014	-.287344	-.033016

Annex 5: Turnbull willingness to pay estimation

Non-residents

southern				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.8	0.2	0.20	0
30	0.73	0.27	0.07	0.70
50	0.59	0.41	0.14	4.20
70	0.41	0.59	0.18	9.00
90	0.21	0.79	0.20	14.00
110	0.18	0.82	0.03	2.70
		1	0.18	19.80
			sum	50.40

Arusha elim 70,90				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.84	0.16	0.16	0
30	0.67	0.33	0.17	1.70
50	50%	0.503311	0.17	5.20
110	0.38	0.62	0.12	5.83
		1	0.38	41.80
			sum	54.53

Kilimanjaro elim 70,90				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.76	0.24	0.24	0
30	0.66	0.34	0.10	1.00
50	0.57	0.43	0.09	2.61
110	0.47	0.53	0.10	5.15
		1	0.47	51.70
			sum	60.46

Manyara				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.92	0.08	0.08	0
30	0.81	0.19	0.11	1.10
50	0.71	0.29	0.10	3.00
70	0.71	0.29	-	-
90	0.44	0.56	0.27	18.90
110	0.43	0.57	0.01	0.90
		1	0.43	47.30
			sum	71.20

Tarangire				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.83	0.17	0.17	0
30	0.66	0.34	0.17	1.70
50	0.51	0.49	0.15	4.50
70	0.44	0.56	0.07	3.50
90	0.31	0.69	0.13	9.10
110	0.24	0.76	0.07	6.30
		1	0.24	26.40
			sum	51.50

Serengeti elim 70,90				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.94	0.06	0.06	0
30	0.87	0.13	0.07	0.70
50	0.71987	0.28013	0.15	4.50
110	0.65	0.35	0.07	3.49
		1	0.65	71.50
			sum	80.20

Expatriates

all parks				
usd_adl	%yes	%no	fj	Turnbull WTP
10	0.81	0.19	0.19	0
30	0.68	0.32	0.13	1.30
50	0.33	0.67	0.35	10.50
70	0.28	0.72	0.05	2.50
90	0.25	0.75	0.03	2.10
110	0.12	0.88	0.13	11.70
		1	0.12	13.20
			sum	41.30

Tanzanians

all parks				
usd_adl	%yes	%no	fj	Turnbull WTP
1.88	0.76	0.24	0.24	0
4.24	0.76	0.24	-	-
6.12	0.47	0.53	0.29	1.23
8.47	0.47	0.53	-	-
10.33	0.42	0.58	0.05	0.42
		1	0.42	4.34
			sum	5.99