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## 9. Economic benefits to foreigners visiting Morocco accruing from the rehabilitation of the Fes Medina

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### INTRODUCTION

This chapter describes a study for the World Bank which measured some of the economic benefits from a proposed project to preserve and restore the Fes Medina, a World Heritage Site. This study focused on the benefits to foreigners visiting Fes and to foreigners visiting Morocco but not visiting Fes. The economic benefits were measured using three contingent valuation survey instruments which were developed for this study and administered in Fes, Casablanca, and Tangier. The design, development, and administration of these survey instruments are described, and the data analyses for the two groups of foreign visitors are presented separately. The Turnbull lower bound on the sample mean for the Fes visitors was \$69.59; the related aggregate estimate for the 161,149 estimated adult visitors to Fes who stayed overnight in a Fes hotel was \$11,233,148. Similarly, the Turnbull lower bound on the sample mean for visitors to Morocco who did not visit Fes was \$30.92; the related aggregate estimate for the estimated 1,516,169 adult visitors who stayed overnight in a Moroccan hotel but did not visit Fes was \$46,879,945.

### Description of Morocco and the Fes Medina

The Kingdom of Morocco (Morocco), known locally as Al-Mamlakah Al-Maghribiyah or by the shorter name Al-Maghrib, lies on the northwestern coast of Africa, bordering the North Atlantic Ocean and the Mediterranean Sea, and across the Strait of Gibraltar from Spain. With an area of some 446,550 km<sup>2</sup>, it is slightly larger than California. It borders Algeria and Western Sahara and has a coastline of some 1835 km.

The population of Morocco is around 30 million and growing at about 2% per year. Approximately 99% of the population is Arab or Berber; about 99%

of the population is Muslim. Arabic and Berber dialects are the common languages; the official language is Arabic but French is often spoken in business, government, and diplomacy. About 50% of those aged 15 and over are literate.

The city of Fes is the oldest of Morocco's four imperial cities. Its founder, Idris I, established it around 789. By the 11th century, under the Almoravids, Fes had become a major Islamic city. Although it reached its zenith as a center of learning and commerce under the Marinids in the mid-14th century, it has continued to serve as an important religious center for Morocco and the Islamic world.

A notable feature of the city today is that its medina retains a great deal of its ancient cultural and economic integrity. The oldest portion of the Fes Medina, Fes el-Bali (the name means old city) is the home of more than 100,000 inhabitants whose 12,000 or more traditional houses are still partially surrounded by the ancient battlements. Its numerous narrow, twisting streets are lined by hundreds of small shops and workshops where traditional crafts are pursued; these streets are crowded with people and the animals that carry goods to shops and workplaces. It contains the oldest mosque in northern Africa, a famous Islamic university founded in 859, and numerous other culturally important buildings and fountains. The Fes el-Jedid, while called the new city, actually dates back to the 13th century. It contains the Royal Palace and the adjoining Great Mosque as well as the old Jewish quarter.

Today the Fes Medina's cultural heritage is a world-renowned attraction for tourists. According to one tourist guide:

The medina of Fes el-Bali is one of the largest living medieval cities in the world and the most interesting in Morocco. With the exception of Marrakesh, Cairo and Damascus, there is nothing remotely comparable anywhere else in the Arab world. (Simonis and Crowther, 1995: 216)

It is also in jeopardy. According to this same guide:

[T]he old city especially, some experts have warned, is slowly falling apart. . . . in the long term it will need huge investment if its unique beauty is to be preserved. (Simonis and Crowther, 1995: 216)

The cultural importance of the Fes Medina was recognized in 1980 by UNESCO, which named it as the first place in Morocco to be listed as a World Heritage City.<sup>1</sup> A more complete account of the history and the current culture of the Fes Medina can be found in Escher and Wirth (1992).

### **Description of Proposed World Bank Project in Fes**

The ties between economic development and cultural tourism have long been recognized (McNulty, 1986) and have been factored into several World Bank

projects (Goodland and Webb, 1989). UNESCO, the United Nations organization with responsibility for preserving the international environmental and cultural heritage, turned to the World Bank because of the Bank's expertise in project evaluation and experience in community and municipal development, in the hope that some cultural heritage preservation and restoration projects, when viewed in a holistic manner, would be eligible for Bank funding.<sup>2</sup> Recently, in collaboration with UNESCO, and in partnership with the J. Paul Getty Foundation, the World Bank launched a major initiative directed at preserving and restoring cultural heritage and developing methods of measuring the benefits of cultural heritage projects (World Commission on Culture and Development, 1996).

#### **Specific focus of this study**

In March 1997, as part of the studies undertaken to develop a strategy for the rehabilitation of the non-monumental built environment in the Fes Medina, the Harvard Graduate School of Design and Morocco's Agence Pour La Dedensification et la Rehabilitation de la Medina de Fes published a report (March, 1997) proposing a comprehensive strategy for the rehabilitation of the Fes Medina. A brief summary of Fes history and the rehabilitation project may be found in Darles and Lagrange (1996). The proposed rehabilitation strategy seeks to halt the Medina's structural and economic decline by an array of interventions, carefully designed to retain both its historic character and economic vitality. Based on this strategy, components for immediate action were detailed and the project plans were sent to the World Bank for possible funding. This paper reports on work we undertook to quantify some of the economic benefits that would likely accrue to foreign visitors to Morocco if the Fez rehabilitation project were successfully completed.

#### **Sources of economic benefits**

Economic benefits accruing from the project involving the Fes Medina being considered by the World Bank can be divided into five categories (see Table 9.1), depending upon the beneficiary.

*Table 9.1 Categories of economic benefits*

Category	Beneficiary source
1	Fes residents
2	Other Moroccans
3	Foreign visitors to Fes
4	Other foreign visitors to Morocco
5	Foreigners not visiting Morocco

The environmental assessment report by the Harvard Graduate School of Design and Agence Pour La Dedensification et la Rehabilitation de la Medina de Fes (June, 1997) considers the benefits that will accrue to Fes residents (category 1). In this chapter, we do not consider any of the potential benefits to Moroccans (categories 1 and 2), but rather concentrate on attempting to quantify to various degrees the potential benefits in categories 3 and 4 likely to accrue to foreign visitors to Morocco and/or Fes if the project is undertaken. A complete comprehensive benefit-cost analysis should include all five of these benefit categories, rarely done in practice because of the expense and difficulty of measuring all sources of benefits and the widely held belief that benefits of most projects outside the immediate area or country are likely to be negligible. While this may be true in general, it is unlikely to be the situation where substantial cultural or environmental resources are at issue. In this particular instance the project involves a rapidly deteriorating UNESCO World Heritage Site which has long been a major tourist destination. In such instances it has long been known (Dixon and Sherman, 1990) that a substantial fraction of the benefits of an improvement project may accrue not to local residents but rather to foreign visitors to the site. These benefits are often measured using either contingent valuation or travel cost approaches (Freeman, 1993). Most of the effort in this study was directed toward quantifying benefits that fall into category 3.

Since World War II, many factors in the developed world, including rising incomes, declining transportation costs, increasing urbanization, increasing population, increasing education, and increasing leisure time, have promoted the demand for tourism (Jud and Hyman, 1974). In econometric analyses of tourism demand, the income of tourists and the relative prices found in destination countries have been found to be important determinants. Other factors include marketing, transportation costs, exchange rates, political unrest, economic recession, and international events such as the Olympics (Crouch, 1995; Lee *et al.*, 1996). The effects of the determinants of tourism demand are likely to vary by country-of-origin and country-of-destination, making it necessary to examine particular sites. Crouch (1995) notes the importance of differentiated, unique tourism destinations, and how they are likely to have more inelastic demand curves than those of more generic tourist destinations. Historic cities have become increasingly popular destinations, and the designation of World Heritage Sites has drawn further attention to already popular attractions (Ashworth and Tunbridge, 1990; Drost, 1996).

Less frequently measured are the potential benefits accruing to other foreign visitors to the country (category 4) and to those not living in or visiting the country where the project is being considered (category 5). Benefits may accrue to agents in these two categories due to passive use considerations (Krutilla, 1967; Carson *et al.*, 1999). These considerations include an appreciation for the existence of the cultural resources in Fes or a possible desire to visit Fes in

the future. One would expect economic benefits from such considerations on a per-agent basis to be greater for category 4 beneficiaries than category 5 beneficiaries. In both categories one would expect to see per-agent estimates of economic value which are lower than category 3 beneficiaries. However, due to the much larger number of agents in these categories, even very low per-agent benefits may translate into large aggregate contributions to the total benefit estimate. This effect, inherent in the nature of public goods, raises important issues about the choice of the order in which goods are valued (Hoehn and Randall, 1989; Carson *et al.*, 1998). This issue is of less importance to the consideration of category 3 benefits since these are benefits to private agents who made the decision to visit Fes.

In this chapter, we look at category 3 benefits and category 4 benefits measured using several different contingent valuation (CV) surveys administered in Fes, Casablanca, and Tangier. In a report to the World Bank on the larger study (Carson *et al.*, 1997) of which these CV surveys were a part, we also attempt to develop a crude estimate of the possible magnitude of category 5 benefits in Europe using a Delphi approach which asked CV researchers to provide their best professional guess of the likely results of undertaking a CV survey in Europe.

## METHODOLOGY OF CV STUDY

### Sampling Design for Moroccan Surveys

We designed a multi-stage sample of 600 adult visitors to represent all English and French-speaking visitors to Morocco during June–July, 1997, including tourists and those visiting for business or other purposes. The overall sample size of 600 respondents and the use of at most two languages was determined by time and budget constraints. The two languages chosen were French and English, as an examination of the 1996 visitor information showed that visitors from countries speaking these languages comprised the two largest proportions of visitors to Fes during our study months of June and July, 38.5% and 15.4%.

In order to be sure of an adequate representation of visitors to Fes, the group of primary interest in this study, we allotted 400 out of the total 600 budgeted interviews to be completed in Fes. One hundred and twenty of the remaining 200 interviews were allotted to Casablanca and 80 to Tangier, on the basis of their respective visitor flows. Some of the Casablanca and Tangier sample had been or were planning to visit Fes during their current visit; others were not. The former group plus the interviews conducted in Fes constitute our Fes visitor sample. The latter group constitutes our non-Fes visitor sample.



We used a three-stage sampling design: first, from a list of the other major Moroccan cities we randomly selected two other cities (Casablanca and Tangier); second, in each of the three cities, we sampled hotels from a list of that city's one-star and higher hotels; third, we sampled a target number of guests to interview in each hotel from the guests identified by the hotel as French, American, British or Canadian in nationality. In practice, the low occupancy rates during the slow tourist season in June and July in Fes required us to increase the size of our hotel sample somewhat. The target number of interviews for each hotel was determined by the hotel's size, as measured by number of rooms and modified, as necessary, by its actual room occupancy when the interviews were conducted. Additional details on sampling are contained in Appendix B of the Carson *et al.* (1997) report.

### Development of Fes CV Instruments

We used three interview forms in this study: Form 1 was used for the interviews conducted in Fes; Form 2 was used for the Casablanca-Tangier interviews of visitors who had or intended to visit Fes during this trip; Form 3 was used for those visitors in the same two cities who did not intend to visit Fes this trip. Each of the three forms contained the same basic scenario, with modifications as necessary for the different locations and experiences of the respondents. Whether a respondent in Casablanca or Tangier received Form 2 or 3 depended on the respondent's answers to a short series of screener questions about the visitor's itinerary. Each of the three forms has an English and French version, for a total of six versions. The three questionnaire forms were finalized in English and then translated into French.<sup>3</sup> Each of the six location-language versions was administered to equivalent subsamples (subsamples a-f), each of which received a different payment amount (price-point) in the willingness-to-pay (WTP) question. This design makes possible the use of the pattern of answers to the WTP question to trace the demand curve.

In designing the survey instruments for this study, we relied on the principles for CV survey design we have developed and used successfully in other CV surveys. [Carson *et al.* (1997) contains a copy of each form and language variant.] Our goal was to design instruments that could easily be administered in person in a short period of time and would be clearly understood by the respondents with sufficient information so that the respondents would understand the nature of the choice without being overwhelmed or bored by unnecessary detail. We place a great deal of emphasis in our design on avoiding demand effects where the respondent would feel that a certain type of answer is expected. Whenever we were unsure about the possible effect of a design feature, we chose the option that seemed likely to underestimate, rather than overestimate, the respondent's willingness to pay.

Below we present an overview of Form 1, the instrument used in Fes, and comment, where appropriate, on the Form 2 and Form 3 variants. We will consider each of the instrument's four sections in turn, and identify the questions that play a role in our estimation equations by the acronyms used for our analysis.

### Section 1

The first section consists of 16 questions,<sup>4</sup> which obtain information about the person's visit to Morocco and to Fes. They include questions about the reason for visiting Morocco (Q. 4 HCITY<sup>5</sup>) and the amount of knowledge they had before visiting Fes (Q. 6 KNOW). Many of the earlier questions ask about the respondents' travel experiences in Morocco, including questions (Q. 12) about visits to other cities such as Marrakesh (MARK), Meknes, and Rabat (RABAT), which are potential substitutes for Fes. Questions 13 to 15 measure the visitors' attitudes about how interesting they found the Fes Medina (Q. 13), how strongly they would recommend it to friends (Q. 14 FTRIP), and whether they would like to visit it again some time in the future (Q. 15 RTRIP).

### Section 2

The material in this section contains the Fes scenario, that consists of a short narrative supplemented by show cards featuring colored photographs of the Medina. The purpose of this text, which was the same for each form, is to provide each respondent with a standardized set of information about the character and condition of the Fes Medina today. The text describes the Fes Medina and its cultural importance, and explains that the condition of the Fes Medina is deteriorating, due to insufficient resources for rehabilitation. The text concludes by saying that, without a major rehabilitation effort, the Medina will continue to decline. Three photographs on show cards visually document the story told in the text; they help maintain respondents' interest and attention to the narrative. Table 9.2 presents the scenario's entire text and a description of the show card displayed during the reading of each part of the text.

### Section 3

The third section of the instrument describes the conditions of the WTP choice presented to the respondents. It presents a plan to rehabilitate the Fes Medina, which is described as having been developed by "the Moroccan Government in collaboration with experts from international agencies". The respondent is told the plan would accomplish three things: improve the Medina's appearance and repair and clean up buildings, streets, sewers, public spaces, and monuments; preserve the Medina's traditional character and cultural heritage for future generations; ensure that the Medina will continue to be a productive and vibrant living city.

Table 9.2 Description of the scenario used in all forms of the Fes rehabilitation survey

Text read by the interviewer	Description of show card
<p>As you may know, the Fes Medina is one of the largest living medieval cities in the world. Because of its uniqueness it was one of the first cities in the world to be named by UNESCO as a World Heritage City.</p> <p>HAND R. THE PHOTO CARD I. This photograph is an aerial view of the Fes Medina. Founded around 800 A.D., the 12,000 traditional houses in this part of Fes are now the home of more than 100,000 people. The Medina is the setting for numerous historic mosques, palaces, monuments, gardens, and fountains.</p> <p>Of special importance is that it continues to be a living city with numerous markets and many workshops where traditional crafts are practiced. The largest of the two parts of the Medina, the Fes el-Bali, is still surrounded by the ancient wall. Visitors enter its maze of twisting alleys through the traditional gates.</p>	<p>This card contained a single color aerial photograph of the Medina. At the top it was titled "The Fes Medina". At the bottom a caption read: "The Fes Medina was founded around the year 800 A.D. It is one of the largest living medieval cities in the world. In 1980 it was the first place in Morocco to be listed as a UNESCO World Heritage City".</p>
<p>HAND R. PHOTO CARD II. Over the years many of the Medina's buildings have deteriorated because of overcrowding and inadequate city services. Photo A shows a recently repaired house.</p> <p>Unfortunately government resources are too limited to keep up with the need for rehabilitation. [PAUSE] As a result, many houses continue to deteriorate and every year, as shown in photo B, some collapse before they can be restored.</p> <p>The Medina has hundreds of streets. Photograph C gives an example of a well-maintained street. [PAUSE] Because funds for maintenance and city services are inadequate, many streets, like the one in photograph D, are badly paved and dilapidated.</p>	<p>This card contains four color photographs (reproduced by color xerox from original photographs downloaded from the Harvard Design School Fes Project Office's digital photograph files). Each pair was chosen to show a representative well-maintained and not well-maintained features. The captions read: "A House", "B Ruin of House", "C Residential Street", and "D Residential Street".</p>
<p>HAND R. PHOTO CARD III. Despite the efforts of local authorities, some of its important public buildings have become run down, such as the building in photograph F. Many public spaces urgently need refurbishing, to keep them from further deterioration. Only a few of its numerous fountains now flow with water.</p> <p>There is concern that unless a major effort is undertaken, the old Fes Medina will continue to decline and may soon lose its historical character, perhaps forever.</p>	<p>This card contains four photographs, paired in the same manner as before. The captions read: "E Public Building", "F Public Building", "G Fountain", and "H Fountain Repair".</p>
<p>TAKE PHOTO CARDS BACK.</p>	



These prospective accomplishments represent the public goods that the proposed rehabilitation plan will provide. The respondent is then told "the rehabilitation plan will be expensive and cannot be implemented without additional sources of support". We use this wording to help overcome any belief respondents might have that the Moroccan Government, UNESCO, or some other agency might pay the full cost.

The choice portion of the interview contains a number of specific features that we describe below and summarize in Table 9.3.

*Payment vehicles and choice mechanisms* The respondent is then told that "one way to help pay for it" would be for visitors to pay a special fee. Because CV surveys should offer respondents a choice that is as plausible as possible, so that they take the choice seriously, we used two types of fees (which constitute the payment vehicle) for different portions of our sample. Table 9.3 summarizes these differences. We asked the Fes visitors (Forms 1 and 2) what decision they, as consumers, would have taken about including Fes in their itinerary if they had to pay a Fes preservation fee of a specified amount (see below) when they registered at their Fes hotel. This way of framing the issue reminds respondents that they have substitutes, other historical Moroccan cities that are already in their itinerary or which could be in their itinerary. It forces them to consider whether Fes would still be worth visiting if the cost of the visit was increased by the stated amount. Further, the use of a mandatory Fes hotel visitor fee as the payment mechanism carries with it the implication that it is not a marginal change in the characteristics of the Fes Medina being valued, but rather the preservation/restoration plan versus the disappearance of the Fes Medina as an integral whole under the current status quo situation.

In all versions, the interviewers showed respondents a Card C which briefly summarized the choice presented to them. For example, Card C for Form 1 read as follows:

1. Still come to Fes even though the preservation fee would add to the cost of my visit.

Or

2. Not include Fes in my itinerary for this trip and use the money for other purposes.

Since this type of choice would not be meaningful for the non-visitors to Fes (Form 3), we asked them about a departure fee that all foreign visitors would have to pay when they left the country. Here we presented the choice in terms of whether or not they would favor the imposition of such a departure fee at a specified amount if not paying it would lead to the "likely deterioration of the

Table 9.3 Characteristics of the choice for preserving the Fes Medina by form

Component	Form 1	Form 2	Form 3
Payment vehicle	Special "cultural heritage preservation fee" to be paid when registering at hotel during each visit to Fes	Special "cultural heritage preservation fee" to be paid when registering at hotel during each visit to Fes	Special "Fes preservation departure fee" on all visitors when they leave Morocco
Choice mechanism	Personal decision whether to still come to Fes if the fee adds a specified amount per adult to cost of visit OR not to include Fes in trip itinerary	Personal decision whether to still come to Fes if the fee adds a specified amount per adult to cost of visit OR not to include Fes in trip itinerary	Whether to favor departure fee of specified amount that would increase the cost of each visit to Morocco OR oppose fee and accept the likely deterioration of the Fes Medina
Fiduciary mechanism	Special fund solely for the preservation of Fes	Special fund solely for the preservation of Fes	Special fund solely for the preservation of Fes
Elicitation mechanism/number of price points	Binary/choice 6	Binary/choice 6	Binary/choice 6
Stated price amounts in dirhams	50, 100, 250, 500, 1000, 2000	50, 100, 250, 500, 1000, 2000	25, 50, 125, 250, 500, 1000
French franc equivalent	29, 59, 147, 294, 588, 1176	29, 59, 147, 294, 588, 1176	15, 30, 74, 147, 294, 588
Dollar equivalent	5, 10, 25, 50, 100, 200	5, 10, 25, 50, 100, 200	2.50, 5, 12.50, 25, 50, 100

Fes Medina". This type of choice is similar to the referendum-type choice whether to tax oneself that we and others have found effective in CV studies conducted elsewhere. We did not pose the question in an explicit referendum format in this study, because it would not have been meaningful to the respondents since they are not Moroccan citizens.

Anecdotal evidence from the field director indicates that the respondents paid attention to the interview and found the payment choice plausible. She reports that a majority of the respondents became so involved in the subject matter of the interview that they wanted to continue to discuss the Medina after the conclusion of the interview. Those who chose not to pay typically took the time to explain their choice. One woman even presented 100 dirhams (the amount she was asked about) to the interviewer because she thought she had to pay the amount at the end of the interview.

*Fiduciary mechanism* We included the strong assurance that the fee "would go into a special fund for the preservation of the Fes Medina and could *not* be used for any other purpose" in an attempt to overcome anticipated skepticism about whether the money would in fact be used for that purpose. In our experience, such skepticism is common in the US, and we expected that it would be at least as common among our respondents in Morocco. If respondents are skeptical, they are likely to choose not to pay for the program, biasing the results downward.

*Elicitation mechanism* We used a binary, discrete-choice elicitation question that identified a specific cost (one of six price-points randomly assigned to respondents) in dirhams. Fes visitors (Forms 1 and 2) were asked whether they would have visited Fes during the present trip if they had to pay the stated amount. Foreign tourists, who did not plan on visiting Fes during this trip, were asked whether all visitors to Morocco should have to pay a fee of the specified amount for Fes (Form 3).

*Price points* In this study, we randomly assigned each respondent to one of six price-point subsamples that varied between 25 and 2000 dirhams. Table 9.3 shows the amounts. We chose the six amounts to bracket the anticipated range of median willingness to pay and to give us information about the tails of the WTP distribution. Time limitations prevented us from pretesting the distribution, so we were forced to rely on our best judgment about the end points and intervals. We assumed those visitors who were visiting Fes would be willing to pay more than those who were not visiting Fes. We stopped the upper ranges for these two groups at the equivalents of \$200 and \$100, \$200 for the hotel fees for the Fes visitors and \$100 for the departure fees for the non-Fes visitors.

because these amounts were likely to be the highest plausible amounts the government might contemplate charging for hotel and departure fees.

The price was stated in dirhams, the Moroccan currency. The interviewer also gave its approximate equivalent in other currencies of likely relevance to the respondent. English-speaking respondents were told the equivalent in US dollars and British pounds; French-speaking respondents were told the equivalent in French francs.

The survey scenario consisted of the rehabilitation plan and the means by which it would be financed in a straightforward way, intended to minimize demand effects. When the choice question was reached, we encouraged the respondent to give "your frank opinion" to help legitimize answers (such as choosing not to pay the amount) that some respondents might consider socially undesirable. The wording of the choice in Forms 1 and 2 calls explicit attention to the tradeoff between paying the amount or not including Fes in the respondent's itinerary. The possibility that the respondent might want to "use the money for other purposes" was also invoked.

#### **Section 4**

The last section consists of a small number of questions that measure background information that we used to create some important dummy variables for the regression analysis we describe below. Questions 18–20 ask whether the respondent is traveling alone (ALONE) or with family members. Questions 21 and 22 measure age; question 28, gender. In question 23, we asked where the respondent currently lives; from the answer we created a dummy variable (FRANCE/SPAIN) that indicates respondents who live in France or Spain, the two European countries closest to Morocco. Questions 24–26 concern the respondent's education; from these questions we created a simple indicator variable, UGO, which measures whether the respondent has attended university for one or more years.

Measuring income is usually complicated, and asking about income must be handled very carefully in surveys. The major complication comes from the need to measure family income from all sources before taxes; it is not just the salary of the primary wage earner. In an international survey such as this one, asking for family income is even more complicated because several aspects of income which are usually taken into account in the question's wording—currency, income distribution, and the tax structure—vary by country. The compromise we devised is a question that asks respondents to place themselves in their country's income distribution:

Q. 27 What percent of the people in your country have a higher annual income than you? Just your best guess: would you say only one percent have a higher income than you, or ten percent, or twenty percent, or thirty percent, or forty

percent, or would you say half or more of the people in your country have a higher income than you?

This formulation also has the merit of reducing the tendency of the income question to evoke sensitivity about revealing income. We do not have information about whether answers to this question tended to overstate or understate the respondents' income. In our analysis we use a dummy variable derived from answers to this question, TINC, which indicates those reporting income in the top 20% in their country.

### Field Work

Interviewing began in Fes on June 16, 1997 and continued until July 3 under the direction of Dr. Naima Lahbil Tagemouati, a Moroccan economist with extensive experience in conducting surveys in Morocco. The Casablanca and Tangier interviews were conducted between July 15 and July 25. Three principal interviewers (two men and one woman) worked on the project, all Moroccan nationals with extensive experience working with tourists and fluent in one or both of the two languages in which we conducted the interviews.<sup>6</sup> Permission from the management at the selected hotels was secured to conduct interviews with their guests. Virtually all the interviews, which lasted between 10 and 20 minutes, were conducted in the respondents' hotels at times and places that were convenient to them.

In order to help avoid response-selection bias, we trained the interviewers to limit their explanations of the interview's purpose to scripted responses that did not reveal its true purpose. For example, if a prospective respondent asked about the study's purpose, the script provided to the interviewer stated the following:

The purpose of this study is to learn what people like you think about your experiences here in Morocco and about some possible future changes in the Fes Medina.

We took a number of steps to avoid interviewer bias. Interviewers were trained to administer the instrument in a neutral fashion and to avoid communicating their preferences non-verbally. We designed the protocol for the practice interviews to give the interviewers experience with respondents who were not willing to pay for the Fes rehabilitation plan. During the interviewer training, we emphasized that our goal was to find out what people really felt about the topics covered in the interview, and emphasized that there were no right or wrong answers to our questions. This statement is also part of the brief introduction the interviewers read to every respondent:



Thank you very much for agreeing to take part in this study. Please understand that there are no right or wrong answers to any of the things I will ask you about. We just want to know what you really think.

If I do not read any part of the questionnaire clearly enough, please let me know right away.

Relatively few visitors who were approached for an interview refused to cooperate. We estimate that the response rate (those who took the interview divided by the total number of people approached for an interview) was approximately 90% in Fes. The non-cooperation rate was highest among older visitors to Fes traveling with group tours whose schedules did not leave the visitors with much free time.

## RESULTS

### Fes Visitor Estimates

The survey administered to Fes visitors described the plan to improve conditions in the Fes Medina that should result in the preservation of the historic part of the city. The payment mechanism used in the survey was an adult visitor registration fee which would be included in the hotel bill. Two largely identical versions of the survey were administered: the first to foreign visitors staying in hotels in Fes and the second to foreign visitors to Morocco sampled in hotels outside of Fes who either had already visited Fes or intended to visit Fes on this trip to Morocco. The second version of the survey instrument was administered in Casablanca and Tangier. English and French versions of the questionnaire were available, and bilingual interviewers were used. After dropping a small number ( $N = 11$ ) of substantially incomplete observations, we obtained a usable sample of 471 observations.<sup>7</sup>

Survey respondents were randomly assigned to one of six monetary amounts in dirhams, the Moroccan currency. In US dollar equivalents, the amounts used are approximately \$5, \$10, \$25, \$50, \$100, and \$200. Respondents who indicated they would visit Fes despite the hotel tax are treated as *for*, and those who indicated they would not or did not know are treated as *not-for*. The distribution of responses is displayed in Table 9.4. The percentage for the Fes visitation fee systematically declines from 83.1% at \$5 to 27.8% at \$200.<sup>8</sup> A  $\chi^2$  ( $df = 5$ ) statistic of 84.53 suggests a significant relationship at  $p < 0.001$ .

In order to obtain median and mean WTP estimates from the data in Table 9.4, one must either assume a parametric distribution for the underlying latent distribution or estimate bounds on the statistics of interest non-parametrically. A non-parametric technique proposed by Turnbull (1976) was applied to the

data in Table 9.4. This technique is now often used in CV surveys (Carson *et al.*, 1994; Haab and McConnell, 1997). This model has a log-likelihood of -280.81. The Turnbull technique imposes the restriction from economic theory that the percentage willing to pay does not increase as the monetary amount asked about is increased. That restriction is not violated by the raw data displayed in Table 9.4.

Table 9.4 For/not-for responses at each visitation fee amount

Amount (\$US)	% Not-for	% For	N (row)
\$5	16.87	83.13	83
\$10	25.00	75.00	84
\$25	45.00	55.00	80
\$50	57.89	42.11	76
\$100	69.74	30.26	76
\$200	72.22	27.78	72

Effectively the Turnbull technique estimates the probability mass that falls into each of the intervals defined by the monetary amounts used in the survey. From Table 9.4 it is possible to determine that median WTP lies between \$25 and \$50, because 55% of the sample is willing to pay more than \$25 while 42% of the sample is willing to pay more than \$50. By allocating all of the probability mass at the lower end of each interval, a lower bound on the sample mean is defined. This lower bound on the sample mean is \$69.59 and has a 95% confidence interval of [\$57.60-\$81.58].<sup>9</sup>

Parametric distributions may also be fit to the data. Two parametric distributions commonly fit when the data must be positive are the log-normal and the Weibull. Table 9.5 displays the fit of these two distributions with the standard errors of the location and scale parameters given in parentheses. In both cases the parameters are fit with good statistical precision; both distributions are reasonably close in a statistical sense to the non-parametric fit in Table 9.4. The log-normal distribution yields an estimated median WTP of \$38.28 with a 95% confidence interval of [\$29.32-\$50.79], while the Weibull yields an estimated median WTP of \$42.67 with a 95% confidence interval of [\$31.47-\$53.87].<sup>10</sup>

To examine the construct validity of the CV results, common practice (Mitchell and Carson, 1989) is to estimate an equation, often referred to as a valuation function, which predicts a respondent's answers to the binary discrete choice WTP question as a function of the amount the respondent was asked

and variables thought to be related to the respondent's income and preference for the particular good being valued.

Table 9.5 : Parametric models

Distribution	Location	Scale	Log-likelihood
Log-normal	3.6450 (0.1368)	2.1252 (0.2465)	-281.854
Weibull	4.4690 (0.1490)	1.9314 (0.2202)	-283.060

With respect to income, we have two possible variables. The first, TINC, is created from a set of two questions, INCCODE and INCPRCT, which ask respondents for their income relative to other people in their home country in a set of categories (INCCODE) or a numerical response (INCPRCT). Anyone reporting income in the top 20% in their home country was given a value of 1 for TINC, while all others were given a value of 0. Those who refused to respond to INCCODE or INCPRCT were classified as zeros. Because some of these respondents are likely to be ones, the effect of TINC on WTP is likely to be biased downward. The other variable, THOTEL, is an indicator variable for staying in a four or five-star hotel at the time of the interview. Because trip costs can be influenced by the number of people in the traveler's party and the payment mechanism is a per adult fee, we also define a variable ALONE which equals 1 if the respondent is traveling alone and 0 otherwise. From several indicators of education in the survey, we define the dummy variable UGO for having attended a university. This variable is likely to be correlated both with income and also with preferences for cultural amenities.

Several variables may relate to the respondent's taste for visiting the Fes Medina. The first of these is an indicator variable FRANCE/SPAIN for being a resident of France or Spain. Both of these two countries are in close proximity to Morocco, so a visit to Fes is likely to be somewhat less exotic for visitors from Spain and France than for visitors from other countries. A second variable looks at the reason for the visit to Morocco. Here we use two of the seven possible responses, wanting to visit historic cities, which is an obvious reason for wanting to visit Fes, and business.<sup>11</sup> Choosing either of these two reasons will result in the respondent being coded as a 1 on HBCITY, while the other possible responses which do not relate to wanting to visit Fes—beaches, natural beauty, wanting to visit modern cities, wanting to visit the countryside, or others—are coded as 0 on HBCITY. There are two key questions asked before the WTP question that relate directly to preferences regarding Fes. A variable from one of these, RTRIP, is coded 1 if the respondent indicates that they would like to return to Fes, and 0 otherwise. The other, FTRIP, is coded 1 if the respondent

indicates that a Fes visit would be recommended to a friend, and 0 otherwise. Respondents in the Fes subsample who had not yet been to Fes were not asked the RTRIP and FTRIP questions; for these respondents, FTRIP and RTRIP were coded 0. Since some of these respondents may have been coded 1 had these questions been asked, coding them as 0 may have biased the RTRIP and FTRIP coefficients downward. We also recorded the other major Moroccan locations that foreign visitors might go to. The major competitor sites among the imperial cities are Marrakesh and Rabat. Marrakesh is fairly distant from Fes, while Rabat is fairly close. (There were so few reported/intended visits to the fourth imperial city, Meknes, that statistically reliable estimates of the effect of this city could not be obtained.) The last variable we used was BEFORE, defined as equal to 1 if the respondent was interviewed before visiting Fes and 0 if interviewed after visiting Fes.

The estimated valuation function displayed in Table 9.6 is a probit equation using the log of the monetary amount asked about (see Table 9.4), LAMT, and is equivalent to the log-normal specification reported in Table 9.5 with the addition of covariates. This model has a log-likelihood value of -242.771 and a pseudo- $R^2$  of 0.262, which indicates valuation function has achieved a relatively good fit for cross-sectional survey data. Further, all of the variables for which there was a clear *a priori* expectation on sign—LAMT, TINC, THOTEL, ALONE, UGO, HBCITY, RTRIP, FTRIP—have the expected sign and generally are quite significant. The parameter estimate for the FRANCE/SPAIN indicator variable suggests visitors from these two countries are willing to pay less than visitors from other countries. Given the close proximity of these two countries to Morocco, this is not surprising. A Marrakesh visit appears to be complementary to a Fes visit, while a Rabat visit appears to be a substitute. Since Fes and Rabat are in close proximity, raising the hotel cost in Fes would make visiting only Rabat more attractive, and visiting both Fes and Rabat less so. Being asked about the Fes project before visiting Fes (BEFORE) is negatively related to the respondent's WTP. One possible explanation for this result is that actually seeing the situation in Fes makes one more willing to pay to see the Medina rehabilitated.

There were several variables such as age and sex that were found to have almost no effect on predicted WTP. This was also true of an indicator variable for whether one had already finished a tour of the Fes Medina (as opposed to being in Fes and having not started or being part way through a Fes Medina visit). The number of days in the Fes visit also had no influence on WTP, although this is perhaps not surprising given that the payment vehicle required a payment per visit to Fes, not per day spent in Fes. A variable for previous visits to Morocco is positively and significantly related to WTP when included in an equation with only LAMT; but this variable becomes insignificant when the more directly related variables, RTRIP and FTRIP, are included.

Table 9.6 Valuation function for foreign visitors to Fes

Variable	Parameter estimate	Standard error	p-Value	Variable mean
Intercept	1.2653	0.3218	0.001	—
LAMT	-0.5461	0.0576	0.001	3.4252
TINC	0.4048	0.1490	0.007	0.3312
THOTEL	0.3467	0.1679	0.039	0.7686
ALONE	-0.2728	0.1471	0.064	0.6348
UGO	0.3791	0.1436	0.008	0.6879
FRANCE/SPAIN	-0.3596	0.1598	0.024	0.6348

#### Aggregate Estimates for Foreign Visitors to Fes

An aggregate estimate of the annual benefits to foreign visitors to Fes can be obtained by multiplying the desired statistic from the previous section by the number of foreign visitors to Fes. The Moroccan Ministry of Tourism office in Fes estimates that 168,672 visitors from outside North Africa stayed overnight in hotels in Fes during 1996. The payment mechanism in our CV survey pertained only to adults, so we need to reduce this estimate by the percentage who are under 18 years old. From our survey, we obtain an estimate of the fraction of visitors who are under 18 of 4.3%. Applying this correction factor yields an estimate of 161,419 adult visitors to Fes who stayed overnight in hotels; this is the number we will use in the annual benefit estimate presented here. Multiplying the estimated number of adult visitors, 161,419, by the Turnbull lower bound on mean WTP yields an annual aggregate estimate of \$11,233,148 with a 95% confidence interval of [\$9,297,734–\$13,168,562], assuming that sources of uncertainty other than that associated with the sample estimate of the Turnbull lower bound on mean WTP are ignored.

The other sources of uncertainty should be noted. First, the number of visitors in 1997 and future years is likely to be a random variable and could be larger or smaller than that in 1996. If conditions in the Fes Medina were substantially improved, one might well expect visitation to Fes to increase as long as conditions for tourism in Morocco remained favorable. Second, there is uncertainty that stems from deviations of our sample from that of the ideal random sample of foreign visitors to Morocco. In particular, it should be noted that our survey was administered only during the months of June and July. From statistics taken from the Moroccan Ministry of Tourism office in Fes, we know that foreign visitors during this time period are much more likely to be French and less likely to be German than during the rest of the year. We also know that by having the survey only available in English and French, some foreign visitors



not fluent in either of these two languages were systematically excluded from the sample. We suspect that this factor leads to a small downward bias in the estimates as the valuation function in Table 9.6 suggests that visitors from France and Spain are willing to pay less than those from other countries, who are less likely to make casual trips to Morocco. Two other factors are likely to bias the aggregate estimate downward: some foreigners visit Fes but do not spend the night in Fes; some foreign visitors, principally backpackers, do not stay in regular hotels. Their WTP for the project is not included in the aggregate estimate.

#### Estimates for Non-Fes Foreign Visitors to Morocco

The analysis of the foreign visitors to Morocco who did not also visit Fes is similar to that performed for Fes visitors. Here, however, the usable sample size is much smaller ( $N = 126$ ) since two-thirds of the interviews were conducted in Fes and over 35% of the respondents interviewed in Casablanca or Tangier intended to visit or had already visited Fes. The specific attitude questions that were only relevant to people who were visiting Fes were not included in the questionnaire for non-Fes visitors, giving us few potential covariates with which to predict WTP.

Survey respondents were randomly assigned to one of six monetary amounts displayed in terms of the Moroccan currency, dirhams. In US dollar terms, the amounts used are approximately \$2.50, \$5, \$12.50, \$25, \$50, and \$100. The main reason for reducing the amounts relative to those used in the Fes visitor survey was that a departure fee of \$200 earmarked for the Fes project seemed unreasonable. The distribution of responses is displayed in Table 9.7. The percentage for the Fes visitation fee systematically declines from 80.95% at \$2.50 to 10% at \$100. A  $\chi^2$  (df=5) statistic of 30.24 suggests a significant relationship at  $p < 0.001$ .

Table 9.7 For/not-for responses for non-Fes visitors

Amount (\$US)	% Not-for	% For	N (row)
\$2.50	19.05	80.95	21
\$5.00	27.27	72.73	22
\$12.50	30.00	70.00	20
\$25.00	38.10	61.90	21
\$50.00	63.64	36.36	22
\$100.00	90.00	10.00	20

For the data in Table 9.7, the log-likelihood for the Turnbull model is -70.211. The median falls in the interval [\$12.50-\$25.00] and the Turnbull

lower bound on mean WTP is \$30.92 with a 95% confidence interval of [\$22.10–\$39.75].

In Table 9.8, we report the results of fitting two parametric distributions, the log-normal and the Weibull. The log-normal median is \$22.40 [\$13.83–\$39.88]; the Weibull median is \$25.01 with a 95% confidence interval of [\$14.43–\$35.59].<sup>12</sup>

Table 9.8 Parametric estimates for non-Fes visitors

Distribution	Location	Scale	Log-likelihood
Log-normal	3.1089 (0.2469)	2.0064 (0.4036)	-72.852
Weibull	3.7782 (0.2332)	1.5254 (0.3071)	-71.876

Because the respondents who do not visit Fes on this trip are not asked attitudinal variables directly related to Fes, we define two new dummy variables: PMVISIT takes a value of 1 if the respondent has previously visited Morocco and IMPERIAL takes a value of 1 if the respondent will visit one of the other imperial cities, Marrakesh, Meknes, or Rabat, this trip. The result of fitting a valuation function to these two variables, along with the log of the amount asked (LAMT) and the indicator variable for being in the top 20% of the income distribution in one's home country (TINC), is displayed in Table 9.9. The log-likelihood is -64.625 and the pseudo- $R^2$  is 0.253, again a relatively good fit for cross-sectional survey data.

Table 9.9 Valuation function for non-Fes visitors

Variable	Parameter estimate	Standard error	p-Value	Variable mean
Intercept	1.0950	0.3359	0.001	—
LAMT	-0.5596	0.1097	0.001	2.7851
TINC	0.7228	0.2810	0.010	0.3333
PMVISIT	0.4845	0.2635	0.066	0.4444
IMPERIAL	0.3796	0.2695	0.159	0.4603

We also looked at the other variables we had tried in the valuation function for the Fes visitors. The BHCITY variable used in Table 9.6 was positive and significant when LAMT was the only other variable included, but not when the other covariates in Table 9.9 were included. The FRANCE/SPAIN indicator variable was negative and marginally significant in an equation with only LAMT. A dummy variable for staying in five-star hotels was positive and highly

significant without the TINC variable. Unfortunately, only about 10% of our sample were staying in three-star hotels; no respondents were staying in less than three-star hotels. This makes it impossible to estimate the effects of having a sample skewed toward high-end accommodations. This issue is discussed in the next section.

#### **Aggregate Estimate for Non-Fes Foreign Visitors to Morocco**

The World Tourism Organization estimates that in 1996 there were 1,876,070 foreign tourists arriving in Morocco from outside North Africa who stayed in hotels and similar establishments. Reducing this estimate by the number of foreign visitors staying in hotels who visit Fes (168,672) yields an estimate of 1,707,398. This estimate in turn needs to be further reduced by our survey estimate of the percentage of children among foreign visitors not going to Fes, 11.2%. Making this reduction yields an estimate of 1,516,169.

This estimated number of foreign visitors multiplied by the Turnbull estimate of the lower bound on mean WTP yields a benefit estimate of \$46,879,945 with a 95% confidence interval of [\$33,507,335–\$60,267,718].

This estimate comes with a number of important qualifications. The first and perhaps most important is that the sample of non-Fes foreign visitors interviewed in Casablanca and Tangier were almost exclusively staying in four and five-star hotels. Ideally one should either reduce the number of visitors to reflect only the number of foreign visitors staying in upper-end accommodations or reduce the estimated WTP to reflect the fact that those staying in lower-end accommodations are willing to pay less due to income and other factors.

Other issues with respect to this sample of non-Fes foreign visitors are similar to those involving foreign visitors to Fes. First, sampling was only done in July; that may be atypical relative to looking at all the visitors to Morocco in a single year. Second, the availability of the survey instrument only in English and French would have systematically excluded potential respondents not fluent in either of these two languages. Finally, even though Casablanca and Tangier were randomly selected from among international entry points, on a per day basis, tourists found in these two cities may be atypical of foreigners who visit Morocco but not Fes. There are two other factors that should be noted with respect to the estimate of the relevant population size. First, the World Tourism Organization estimates that there are 178,000 foreign tourists who arrive on cruise ships but do not stay overnight in Morocco. Second, we do not include in our estimate tourists who do not stay in hotels or similar establishments, or Moroccan nationals residing abroad. To the extent that these people have positive WTP for the Fes project, the aggregate WTP estimate is too low.

Probably the most important factor in determining the aggregate estimate for the non-Fes foreign visitors is the number of years over which individual

WTP should be aggregated. The key issue is whether there is effectively *additional* competition for the amount of value for the Fes project held by foreign visitors to Morocco. Over one year the answer is likely to be *no*. Over a longer time period, other similar rehabilitation projects are likely to be put forth by the Moroccan Government and/or international organizations. Thus aggregation of our point estimate over many years would likely substantially overestimate total benefits, the situation examined in Hoehn and Randall (1989). One very conservative way to largely avoid this issue is to use only the first year's aggregate estimate as the total aggregate estimate over the time period of interest. Using the one-year estimate \$46,879,945 as the total aggregate estimate for non-Fes visitors will likely provide a conservative estimate despite the oversampling of visitors in four and five-star hotels.

## ENDNOTES

1. The *Convention Concerning the Protection of World Cultural and Natural Heritage (the Convention)*, adopted by UNESCO in 1972, provides for the *World Heritage List* of natural or cultural sites that are part of the national and international heritage. Currently the *World Heritage List* consists of 582 sites of which six, including the Fes Medina, are in Morocco.
2. In this regard, the World Bank has viewed projects with significant cultural resources in a manner similar to projects with significant environmental resources (Serageldin and Taboroff, 1994; World Bank, 1994).
3. The initial translation into French was made by a consultant to the Harvard Design School. This translation was modified for use in the field by Dr. Tagemouati.
4. The first section of Form 3 consisted of only six questions because the other questions were not relevant to visitors who were not visiting Fes.
5. All the variables in the WTP equations are dummy variables. In this case HCITY is a dummy variable where HCITY = 1 if the visitor's most important reason for visiting Morocco was to enjoy the historic cities.
6. In addition to the three main interviewers, Dr. Tagemouati conducted some of the interviews herself and a few of the Casablanca interviews were conducted by two additional interviewers.
7. In five of the 11 cases dropped, the main WTP question was unanswered as were other key questions. In the other six cases dropped, a substantial number of questions were unanswered or answered with *don't know*. Typically, these cases also had *don't know* for the answer to the WTP question.
8. From the perspective of completely mapping out the latent WTP distribution, it might have been desirable to have placed the highest design point at an amount larger than \$200. However, as noted earlier, higher amounts would not have been plausible as a fee on hotel visitors. The implications of not being able to ask higher amounts are that non-parametric estimates of the lower bound on the mean are likely to be more biased in a downward direction than without this constraint and that parametric estimates are more dependent upon the functional form assumed over the right tail of the WTP distribution than would otherwise be the case.
9. The upper bound on the sample mean is not a useful statistic in this case since all that is known is that 27.8% are willing to pay more than the highest amount asked, \$200.
10. It is also possible to obtain an estimated mean WTP using the parameters of these two distributions. The log-normal distribution, which is quite sensitive to assumptions about the shape of the right tail of the distribution, yields an estimate of \$366. The estimated mean

- WTP from the Weibull distribution is \$164. A Weibull distribution fit with two additional parameters to allow more flexibility in the left and right tails yields an estimate of \$131.
11. The Fes project is designed in part to enhance commercial opportunities in the Medina.
  12. The log-normal estimate of mean WTP is \$167.62; the Weibull estimate of mean WTP is \$59.20. A Weibull model with an extra parameter in each of the tails yields a mean WTP estimate of \$43.28.

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