CHAPTER 8

Travel Cost Model: Data Sources and Variable Measures

8.1 INTRODUCTION

This chapter describes the data used to estimate the generalized travel cost model. In effect, it forms a bridge between the previous chapter, which uses the household production framework to develop the generalized travel cost model and the following chapter, which describes the model's empirical results. This chapter highlights how our interpretation of conceptual issues has guided our use of the data to estimate the model. Equally important, it describes quirks in the available data that significantly affect the nature of our empirical analyses.

The data used to estimate the model are for a sample of 43 U.S. Army Corps of Engineers sites that support water-based recreation. Drawing largely on existing information, we obtained the data from four sources: the Federal Estate Survey portion of the Heritage Conservation and Recreation Service's 1977 Outdoor Recreation Survey, the Corps of Engineers Recreation Resource Management System, the U.S. Geological Survey's National Water Data Exchanges, and personal correspondence with the site managers. These sources provide data on both the users of the sites--e.g., visits, origin, and socioeconomic characteristics--and the sites themselves--e.g., size, location, and water quality.

The character of these data has important implications for the estimation of the model. The data on recreation visits, the measures of activities undertaken at the various sites, and the survey procedures have influenced the form of the generalized travel cost model. This chapter discusses each of these data issues along with the construction of the key variables used in the model. It concludes with a brief profile of several characteristics of the 43 Corps of Engineers recreation sites, their users, and the activities provided.

8.2 SOURCES OF DATA

There are four major sources of data for the travel cost approach. This section highlights the nature of each data source, the rationale of using each, and the complementarity among sources.

8.2.1 The 1977 Federal Estate Survey

The 1977 Nationwide Outdoor Recreation Survey was conducted by the Heritage Conservation and Recreation Service as part of the Department of Interior's mandate to periodically develop National Recreation
Plans. In contrast to past recreation surveys, which only included a general population component, the 1977 survey included general population and site-specific user surveys.

The Federal Estate Survey component of the survey, the primary basis of this study, consists of interviews with recreationists at each of a set of recreation facilities. All federally owned areas with public outdoor recreation were considered to comprise the Federal Estate, and sites were chosen on a basis of specific agency control. The majority of interviews were conducted in areas managed by the National Park Service, the National Forest Service, the U.S. Army Corps of Engineers, and the Fish and Wildlife Service. Each agency was then stratified by Federal Planning Regions, and areas were randomly chosen with weight given to annual visitation in 1975.

Interviewing time at each site was based on visitation, which also determined the number of interviews. The final Federal Estate Survey contains 13,729 interviews over 155 recreation areas. Information collected for each respondent included socioeconomic characteristics, current outdoor recreation activities, and attitudes toward recreation. The Federal Estate Survey contains most of the data necessary to develop travel cost models that describe demand for individual recreation sites. For example, the survey included questions on each respondent's origin, time spent in travel, number of visits, and the time spent at the recreation site for the interview trip. All are elements of the generalized travel cost model described in Chapter 7. However, the survey omitted some important variables. Chief among the omissions were the sites that the respondent considered to be substitutes and the allocation of time between activities. Thus, not only is the nature of the data collected in the survey important to understanding the application of the travel cost model, the effect of the omitted variables is equally crucial.

Given that the scope of this study is water-based recreation and that the analysis requires detailed descriptions of the activities at each site, we chose only the U.S. Army Corps of Engineers sites from the Federal Estate Survey. These 46 sites also ensured consistent management of recreation activities. We eliminated three sites from the analysis because the data were inconsistent or the interview site location was ambiguous. Table 8-1 shows the schedules of the interviews at the 43 Corps of Engineers sites used in this study.

8.2.2 Recreation Resource Management System

The U.S. Army Corps of Engineers maintains the Recreation Resource Management System for evaluation and planning. Data from this system are compatible with the sites chosen for the Federal Estate Survey and have been available since 1978. Information is collected annually on each water resource project with 5,000 or more recreation days of use. For 1978, this information included financial statistics, facilities available, natural attributes, recreation participation, and number of employees.

In this study, we used the Recreation Resource Management System to define attributes of the 43 Federal Estate Survey sites. Key attributes of an area include land area, shore miles, pool elevation, the number of multipurpose recreation areas, and the facilities provided.