

Box 3.4. The recreational value of game reserves in South Africa

Day (2002) provides a relatively sophisticated application of the multiple site travel cost method to four of South Africa's game parks. These internationally renowned games reserves – Hluhluwe, Umfolozi, Mkuzi and Itala – each cover vast land areas of roughly several hundred square kilometres and are managed by the KwaZulu-Natal Parks Board (KNPB).

The premise for Day's approach is that a visit to any one of these game reserves reflects a choice between four key cost determinants: i) the economic cost of travel to the site; ii) the cost of time while travelling; iii) the cost of accommodation at the site; and, iv) the cost of time whilst on-site. Most travel cost approaches have focused only on costs i) and ii). For many recreational sites this is sufficient. However, Day argues that overnight trips are an important feature of visits to the reserves that he examines in this study. In order to take account of this trip characteristic, Day extends the RUM framework often used in recreational contexts to predict that an individual will choose to make a given visit to a particular site rather its alternatives because the chosen site provides that individual with the most utility (or well-being) from the options available. Such a model is thus ideally suited to explaining a visitor's decision with reference to the qualities of alternative sites (e.g. number and variety of fauna and flora) as well as the different costs of travelling to these sites. Day further extends this framework in order to take account of visitor choice of accommodation and length of stay at the site.

The data used in this study are based upon a (random) sample of 1 000 visitors to the four different reserves. For each of these visitors, this included information on, for example, length of stay, size of party and how much. In total, that the visit cost each household. It is worth noting that this study did not need to use on-site surveys say of visitor total travel costs and demographic/ socioeconomic characteristics. For example, with respect to physical distance travelled, this was calculated by the author with reference to data on visitor addresses combined with a Geographical Information Systems (GIS) model in order to calculate the distance that each visitor travelled "door-to-door". Only visitors living in South Africa were sampled to minimise the problem of multipurpose trips.

An interesting feature of Day's study is the determination of the money value to be assigned to an hour spent travelling relative to an hour spent on-site. Day demonstrates quite reasonably that an hour spent travelling is likely to be valued less highly than an hour spent on-site at the reserve. Furthermore, he argues that the former is likely to be valued more than time in general because there could be a significant disutility associated with time spent travelling. In other words, people enjoy time travelling a lot less than most other uses of time and so this activity has a high opportunity cost. By contrast, the latter is likely to be valued less than time in general because there could be a significant utility associated with time spent on-site. In terms of proportions of the wage rate, Day concludes that his analysis justifies valuing travel time at 150% of the household wage rate while on-site time is valued at 34% of the wage rate. Whereas the latter seems consistent with previous findings in the literature (see discussion above) the former is somewhat higher than conventionally assumed by travel cost practitioners.

Box 3.4. The recreational value of game reserves in South Africa (cont.)

Day uses assembled data on cost, trip duration and accommodation decision variables as well as other trip characteristics as inputs to a sophisticated statistical analysis of the determinants of the choice to take a given trip to a particular reserve (using a nested logit model). Ultimately, the findings of this detailed analysis can be used to derive policy relevant information on the benefits provided by the reserves. For example, Day calculates the amount of money that would have to be given to affected households in South Africa following the (hypothetical) closure of one of the reserves in order to fully compensate them for the loss of this recreational amenity. Since only South African visitors were considered in the analysis, the estimates, these estimates do not include the welfare costs that would be associated with the loss of visitors from abroad. A summary of these findings is presented in Table 3.3.

Table 3.3. Per trip values for game reserves of KwaZulu-Natal

1994/95

Game reserve	Average per trip welfare loss (USD)	Total annual welfare loss (USD)
Hluhluwe	49.7	473 884
Umfolozi	30.5	290 448
Itala	20.4	194 169
Mkuzi	18.7	178 026
Hluhluwe and Umfolozi	105.6	1 006 208

Source: Day (2002).

Why are these data important? Day argues that one response to this question is that the KNPB is finding itself under increasing pressure to justify the substantial public funding that it receives. Demonstrating the monetary value of the recreational benefits provided by the KNPB might be one crucial way in which this body can make its case for public funds. Thus the values in Table 3.3 (column 2) can be thought of as the per trip benefits attributable to the current management regime at each reserve. Alternatively, this is the (yearly) per trip loss of welfare or well-being. In money terms, that occurs if the reserve were to be closed “tomorrow”.

Column 3 in Table 3.3 illustrates the total annual welfare losses for each reserve: i.e. the per trip value multiplied by the number of trips which would no longer be taken over a year if the reserve was closed. In effect, this column provides policy-makers with one basis for assessing the dollar magnitude of the (non-market) recreational benefits generated by public expenditure on each reserve. Finally, it is interesting to note that the final row in Table 3.3 indicates that if both Hluhluwe and Umfolozi (i.e. the most highly valued) reserves were to close then the combined welfare loss is greater (than the sum of individual values in column 3, rows 2 and 3). The intuitive explanation for this is that these two parks are in close proximity to each other. Removing one or other would mean that many households would most likely just switch their visits to the remaining reserve. However, if both of these sites were to be no longer available for visits then the loss for households would be disproportionately greater reflecting the absence of remaining substitutes.