

TRAVEL TO OUTDOOR RECREATION AREAS IN KENTUCKY

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ABRIDGMENT

•THE PURPOSE of this investigation was to examine the nature of travel to outdoor recreation areas in Kentucky. Basic data were obtained by means of a license-plate origin-destination survey at 160 sites within 42 major recreation areas in Kentucky. These data were supplemented by means of a continuous counting program at 10 sites. The O-D survey was conducted on Sundays during the summer of 1970; outdoor recreation travel and other rural travel typically reach a combined peak on summer Sunday afternoons. Overall results indicate that the license-plate O-D survey is a most satisfactory way to gather data of the type required, particularly because it enables maximum utilization of personnel, does not require voluntary participation of the traveler, and allows a large sampling rate. The time selected for the survey, 10 a.m. to 8 p.m. on Sundays, proved to be completely acceptable.

Modeling efforts concentrated on the simulation of distributed travel flows from each of 190 origin zones comprising the entire continental United States to each of the 42 recreation areas. The actual distributed flows, treated as the dependent variable in the analysis, were the 10-hour departing vehicular flows on an average summer Sunday. Factors were developed to convert the 10-hour flows to peak-hour and 24-hour flows. Distributed traffic flows are known to be sensitive to demand for recreation at the origin zone, supply of recreation opportunities at the recreation area, price of the recreation experience, competition among available sources of supply and demand, and various other factors. Primary independent variables that were chosen for analysis and that reflect to a sufficiently accurate first approximation the most important of these sensitivities are population of the origin zone in thousands, p_i , attractiveness of the recreation area, a_j , and spatial separation in miles between the origin zone and the recreation area, d_{ij} , which is used as a measure of the price of the recreation experience.

The attractiveness of recreation areas of varying types and sizes can be reasonably approximated by the number and types of facilities available. The following facilities, listed in the order of highest to lowest significance, were identified as having important effects on attractiveness and were judged to be essential for encompassing the wide range of recreation areas studied: water area, picnic tables, swimming pools, horse-back trails, beach, golf, hiking trails, overnight accommodations, and outdoor drama. The relative importance of those facility types was evaluated by using regression analyses.

Others who have attempted to simulate distributed recreation travel flows have utilized gravity models, opportunity models, system theory models, and single-equation models. Because the available literature revealed no distinct preference for any model type, efforts of this study were concentrated on various single-equation models evaluated by regression techniques and on a cross-classification model. The cross-classification model was found to be an acceptable means for simulating and predicting outdoor recreation travel flows and was decidedly superior to any of the single-equation models evaluated. From the cross-classification model, per capita distributed flows were found to decrease at a decreasing rate with increasing population, increase at an increasing rate with increasing attractiveness, and decrease at a decreasing rate with increasing distance.

The best single-equation model for simulating distributed flows, V_{ij} , was of the form

$$V_{ij} = k_1 d_{ij}^{k_2} p_i^{k_3} a_j^{k_4}$$

in which the k 's are constants. This nonlinear flow equation as well as all others investigated had to be evaluated by using nonlinear regression analysis. Linear regression analysis using transformed (linearized) equations proved totally unsuitable.

Other data, in addition to the distributed flows, were also available from the O-D survey. The average vehicle occupancy rate was found to be 3.13 persons/vehicle. However, rates at specific locations were found to depend on the length of the trip and the nature of the recreation area and were smallest for the short trips to predominantly day-use facilities. Vehicle classification (percentages of the various vehicle types) was also found to depend on both trip length and the nature of the recreation area.