

CHAPTER VII: SURVEY METHODS — ANALYSIS METHODOLOGY

INTRODUCTION

All the articles included in this chapter arose because of the need to pursue certain issues. The nature of these needs is most easily seen in the context of a number of comments about why different papers were prepared. For example, very brief comment gives the reader the necessary background about the preparation of the first three Notes in this chapter. TN 15 was prepared because a number of CORDS document readers found it difficult to understand what the analysis methodology described in TN 12 really accomplished. By using an example in which the meaning of effects could be more easily analyzed, it was felt that many readers would see the results in such a way that they could relate them to the socio-economic effects referred to in TN 12. It was quite by accident that data on distance from the Continental Divide and elevation were studied in relation to the depth of snowfall. The data were provided to CORDS researchers at Parks Canada by Thorsell, a researcher whose studies of wilderness use are well known and who, as of 1976, was employed in Alberta.

One might have thought that comparing CORDS National Survey results with other data which were available on people's participation in the same activities would be an obvious step in any research where there is a concern with reliability and validity. This is what prompted making the comparison presented in TN 24. In fact, making this comparison is one of the factors that motivated the inclusion of questions about different types of hunting and fishing in the 1972 CORDS of people's participation in outdoor recreation activities (see CORDS Data Documentation Volume).

TN 38 was prepared when it was necessary to produce rather quickly figures on the value of park experiences. As those familiar with the procedure used by Knetsch and Cheung in preparing their estimates for TN 31 realize, it is not a trivial matter to compute a demand function for the use of a given park. When there is the possibility of obtaining demand functions for hundreds of parks with different characteristics, one is prompted to look for a methodology that has a relatively sound theoretical basis and still can be quite simply applied. The fact that developing such a methodology pays other dividends in terms of showing researchers the problem in estimating time bias is simply one of those fortunate coincidences that characterize much of the progress that has been made in research.

TN 21 has an interesting history. The first design work on CORDS surveys of park use was the work done for a 1968 pilot survey. As indicated in the Data Documentation Volume, when plans actually went ahead for major park users surveys in Canada in 1969 and 1970, this pilot survey was scrapped in favour of using an entrance survey methodology proposed by Chubb and Crapo (?). The design work for the 1969 survey actually had much to recommend it, given what was not known about park use (volume of park use on different days, etc.). However, the way the days on which to survey were defined and the sampling rates, recording procedures for keeping track of forms handed out, etc., were specified did not lead to good results. Large volumes of information were lost, surveyors did not adhere to schedules, there were no records of hours of the day during which questionnaires were handed out, etc.

However, the experience did prompt the statistician who was responsible for the earlier design to come up with a much more sophisticated system in 1971. The 1971 survey was actually not for CORDS but was a National Park User Survey. Parks Canada users of the data were to be able to make seasonal use estimates and to give profiles of entry over different types of days. In developing the design, there was the practical concern of seeing that the survey staff stayed as busy as possible so that accuracy was maximized.

The 1971 Design evolved in 1972 and 1973 so that in TN 21 it is possible to report on a survey system that is improved but recognized to be far from perfect. In the Paper one sees development by 1973 not the agonizing effort getting to 1973 capabilities. Reaching something better in 1973 stage does not reflect initial poor work but rather the cumulative improvement that can take place as experience is gained.

TN 8 is much more important in the history of the way CORDS evolved than the results indicate. Thinking of the issues which prompted the development of the note resulted in conceptual clarification both about model development and problems of data collection. Explicitly confronting the issue of how to use information about the occupancy of campsites on different days during a season (given the nature of the use pattern involved) reinforces one's concern with the difference between week-end use and week-day use. It also stresses the fact that there are not only week-end and weekday users of parks but any number of kinds of users to whom different models (different reactions to distance, different park attractiveness, etc.) must apply. So this note should be read in the context just described. However, it should also be noted that the analysis procedure described has been used to extract information about an expected use pattern for a park from limited survey information and this use pattern has been applied to make week end, week day-use estimates for planners. Incidentally, Scottish researchers Dufield and Archer have recognized the merits of carrying out a similar procedure in studying tourism in Scotland.

In Chapter VI reference was made to Romsa's et al. methodological work on deriving recreation activity packages using CORDS National Survey data. Another methodology has also been used to analyze these data: this is a methodology proposed by Burton for deriving clusters of activities. Thus, it is possible to present in one paper, TN 10, the consequence of carrying out an analysis to define clusters of activities and to define activity packages. Such results are presented because early in CORDS it was deemed extremely important to deviate from an activity by activity analysis perspective and examine people's behaviour in terms of the broad range of activities in which any one individual may participate. Romsa was engaged by Parks Canada on contract to carry out a cluster analysis in such a way as to group people on the basis of the activities in which they participate. This was at the same time that Gillespie was a student of Burton. Gillespie took advantage of the availability of the 1969 CORDS Participation in Outdoor Activities data to prepare a thesis in which he showed the results of applying the factor analysis approach of Burton to derive clusters of activities.

It was only in 1975 that the decision was made to produce a paper that included the results of both analyses. This was done so that the analyses could be seen together and thus could be used (1) in getting a better view of the issues raised in TN 32 and 37 and (2) so that the results could be used by managers and researchers to get a perspective on what types of people the Canadian population encompasses in terms of their participation and outdoor activities.

TN 19 arose in a very interesting way. Knetsch, after being closely involved with CORDS for many years (1966-1972), accepted an appointment in Malaysia. However, while there he continued to work on CORDS data because of his interest in the study. He was concerned, for one thing, because in developing destination models it was very often the case that the models did not appear to be as good as they should be. At the same time the CORDS research group within Parks Canada was investigating this same problem. So when a paper by Knetsch arrived in Ottawa, the question that Parks Canada researchers raised was not whether the method that Knetsch proposed for weighting observation in carrying out a regression was valid, but whether his weights were the best weights to use. In trying to answer the question it

was found that a set of weights, which are appropriate in a large number of circumstances, could be derived theoretically. This was the beginning of TN 19 in its present form. However, as work on it continued it became clear that the theoretical results opened up the possibility of making a test as to the actual acceptability of a given model. From this sequence of events, TN 19 arose.

In 1973, while Knetsch and Parks Canada researchers were working on one version of TN 19, Goodchild was engaged on contract by Parks Canada to do work testing models to see if they were structurally sound and gave accurate descriptions of origin destination flows. The research on using weighted regression was already far enough developed that Goodchild made use of the material and was able to comment on using a simulation approach and various weighted and unweighted regression procedures to test the goodness of models. He was able to comment on how a comparison between simulated results and real data indicated whether a model was valid or not. Ultimately, TN 35 came to be (in many respects) similar to TN 19 which it was originally to complement. Nevertheless, TN 35 makes unique contributions by presenting results of structural error on estimating model parameters accurately, and by illustrating a number of matters in relation to accuracy achieved, using weighted or unweighted regression, with or without non-linear estimation methods. Goodchild's TN 35 is complementary to, not redundant with, TN 19.

Some of the issues discussed in Goodchild's TN 36 have been recognized for some time as people such as Cicchetti, Ferard and Davidson worked on origin models (see TN 34). But concerns discussed have not been brought together. It was the recognition of this fact that prompted Parks Canada to have work done on the value R^2 should be expected to have when the kind of models used in TN 12 (also TN 6, 20 and 29) are developed.

The final note in this chapter (TN 42) was prepared because many systems for handling geographic information are being used (perhaps misused is a better word) by recreation researchers. Little information is available that allows the practitioner to know what such systems are capable of doing. A simple overview of the issues involved in processing simple geographic information has not been available. The paper presented, meets some of these needs by presenting general concerns and specifics about a system that was developed using a knowledge of problems that were relevant to CORDS and other recreation researchers.