

THE VALUE OF TIME BUDGETS IN RESEARCH AND PLANNING FOR RECREATION POPULATIONS

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ABSTRACT

Time budgets are presented as a technique for overcoming the problems of observing geographically dispersed recreation populations. Benefits and costs of time budgets as compared with alternative data gathering approaches are discussed. Findings from a time budget analysis of the daily activity patterns of residents of a rural, vacation-oriented setting are presented to illustrate the value of time budgets.

A survey of the journals concerned with recreation research reveals increasing attention to numerous methodological issues. Papers discussing scaling, sampling, survey techniques and analytical procedures appear with regularity. In this paper we would like to expand this discussion by presenting some thoughts and data on the use of time budgets. Based on time budgets collected as part of a social survey, we then present descriptive data covering people's activity patterns and a more detailed analysis of their outdoor recreation behavior.

TIME BUDGETS

The first issue is a variation on the familiar theme of convergent validity in recreation research. Specifically, observational approaches have been advocated for years as balance to a perceived overreliance on surveys and the attendant potential dangers of response bias [1]. Since Burch's call for more attention to

systematic observation [2], a small but important body of literature utilizing observation has developed [3–11]. It appears that there may be a trend toward greater balance in the field, with relatively fewer surveys and relatively more observation. Hopefully we will see more experimental work as well as the field develops. Since no one approach is inherently superior and all have their unique strengths and weaknesses [12], more balance in data collection approaches should improve our understanding of recreation behavior.

All of the above-mentioned observational research efforts focused on the behavior of visitors to specific recreation sites – campgrounds, wildfowl refuges, interpretive centers, trout streams, trail overlooks. This fact emphasizes one of the inherent weaknesses of traditional observation, that the behaviors of geographically dispersed populations are very difficult to observe. To some extent this problem can be overcome by sending observers out to where the people are, but this approach soon becomes prohibitively expensive. Further, there are some behaviors which may be of interest which occur in private – e.g., TV watching, reading. In addition, it is very unlikely that an observer can unobtrusively and within the limits of good conscience compile full records of a given person's behavior over any but a very limited time span. While such full recording is often unnecessary for the research question at hand, in other cases the context and sequencing in which certain activities occur may be very important to the investigator. Finally, observational research is often plagued by questions of representativeness – i.e., how typical are the people and behaviors that were observed?

One method that may be of value in overcoming the problems of recording dispersed and private behavior is the time budget. Time budgets are very flexible instruments, with the potential of providing a wide variety of information [13]. As they are customarily applied as part of a sample survey, they have the great strength of generalizability to a larger population. The greatest value of time budgets may be in the assessment of behavioral change [14, 15]. While there has been little use of time budgets by researchers interested specifically in recreation, efforts in other fields exemplify the potential of this method in measuring behavioral and other forms of social change. Prudensky (reported in Robinson and Converse [16]), compared time use patterns of Moscow workers in 1924 and 1959 and found that much of the apparent gain in non-work time had been absorbed by commuting and queueing. DeGrazia based much of his debunking of the myth of great leisure time gains on a time budget done in 1954 by Mutual Broadcasting Company [17]. Vanek used time budget information to analyze the minimal reductions in total housework time by housewives resulting from the development of household conveniences during the last half century [18]. Robinson [19] and Stafford and Duncan [20] compared the 1965 and 1975 U.S. national time budgets and showed, respectively, rising television viewing time and falling work time, with implications for U.S. industrial productivity.

Although all the aforementioned time use studies have been national in scope, there is no logical reason the same approach to social accounting could not profitably be applied at much more limited geographical levels and to much more specific populations. Michelson's panel studies of Toronto families, which were designed to investigate the relationships between housing type (high-rise apartments vs. suburbia) and time allocation, illustrate these applications of the time budget methodology [21]. Time budgets could be used in campgrounds, parks, scenic roads, wilderness areas and other recreation areas to measure the impact of site characteristics on human behavior. Repeated time budgets in such settings could be used to evaluate behavioral changes that may result from technological changes (e.g., lightweight backpacking equipment) or managerial decisions (e.g., the development of interpretive side trails along a scenic roadway). As another example, time budgets could be used as part of neighborhood or community surveys to monitor changes in use (or non-use) of local parks which may result from limited supplies of gasoline.

There is no question that the time budget is a specialized research technology which is relatively expensive and difficult to administer. Further, as typically applied it is not well suited to the measurement of activities which occur on a cycle other than the twenty-four-hour day [22]. This limitation can be surmounted to some extent by administering repeated time budgets to the same subject as was done in the 1975 U.S. National Time Use Survey, but clearly the problems of expense and administrative difficulty expand accordingly. Given this, what reasons can be offered to justify the use of time budgets? The primary reason is that the accuracy of the resulting time use estimates is superior to estimates derived from questions asking the respondent for direct reporting of time spent on specific activities of interest [23]. Despite the contradictory conclusions of Bishop and his colleagues [24], the prevailing evidence appears to be that time budgets give more accurate estimates. Robinson notes that respondent estimates of time spent on activities with minimal social desirability bias tend to be exaggerated [19]. Using direct and indirect observational methods, Robinson has found correlations on the order of .80 between actual behavior and activity estimated by the time budget. Stafford and Duncan also note that specific questions tend to provide overestimates of time use [20] (for example, in 1975 workers estimated their work week between 41.8 hours, while the closest time budget comparison was 36.8 hours), and note that time budgets are necessary for obtaining valid estimates of intermittent and irregular activity such as travel. In the assessment of change and in model-building, the additional accuracy provided by time budgets may justify their use. In addition to improved accuracy, time budgets allow the investigator who may be interested in the daily sequencing or patterning of behavior to examine these concerns more completely and carefully than would be possible with direct questioning [15, 25].

In the remainder of the paper we describe the daily behaviors of people in a vacation-oriented area with data obtained from a formal time budget protocol

included in a multipurpose household survey. The population surveyed was residents living around inland lakes and rivers in two Northern Michigan counties. A major interest of the study was to learn about differential recreation activities of the two groups, in part through time diaries. To our knowledge this time use information is unique; while extensive time research has been done on people in their home environments, primarily in metropolitan areas, no previous application of the time diary in a rural vacation-oriented area has been made. Very little previous research has been done on the daily behaviors of residents in recreation-oriented settings, and thus at this stage in our understanding description is paramount.

METHODS

The Household Survey

Data presented in this paper were gathered during June, July, and August, 1974 as part of a survey of residents living next to inland lakes and navigable rivers in Emmet and Cheboygan counties, located at the northern tip of Michigan's lower peninsula. This region is characterized by high-quality natural and scenic amenities — particularly inland waters — and rapid seasonal and permanent population growth in recent years. As such, it served as a case study of the social and environmental impacts of rural growth [26, 27]. To dovetail with other research into the impacts of land use on water quality, the household survey covered a probability sample of dwelling units within one quarter-mile of seventeen inland lakes and five navigable rivers. The data were collected with the intention of providing an accurate description of water-oriented residents' time use, primarily in the hopes that such description would provide the baseline for future possible assessments of social change in the region, and to answer planners' questions about the importance of the water resource to people living in and visiting the region. Personal interviews were taken by carefully trained local interviewers with a total of 826 heads of household or their spouses. With an 80 per cent response rate, non-response follow-ups were not made. Further details on the survey are presented in Marans and Wellman [28].

The Time Budget

Only year-round residents and those seasonals who had been in residence for at least forty-eight hours prior to the interview were asked to complete the time budget. The two-day allowance for seasonals was made to try to capture the normal patterns of everyday behavior, rather than including the confusion that often accompanies the arrival of people at their vacation site. By excluding those who had recently arrived, the sample size for the time budget analysis was reduced from 826 to 727 respondents. Using a "yesterday" format, time use

information was gathered by asking the respondent first when he had arisen the previous day, what he had done and where, and the ending time of that activity. In like manner, the interviewer led the respondent through the previous day until the latter had retired for the night. The so-called "yesterday" format was used, in preference to either a respondent-maintained log or the log-followed-by-interview ("tomorrow") approach of the 1965-66 U.S. National Study [16], primarily for reasons of efficiency and cost. It was felt that whatever was conceded in the details of the completed time diaries would be more than compensated for by savings in terms of interviewer time and travel. In essence, given the fact that our major purpose in asking for time-use information was to get a first approximation, we did not consider the additional accuracy to be worth the additional cost.¹ The ninety-nine category code developed for the multi-national comparative time use research project was adopted [25], except that the sports and active leisure categories were expanded in anticipation of high levels of activity of this type. Further details on the time budget can be found in Marans and Wellman [28].

RESULTS AND DISCUSSION

For purposes of this analysis we have disaggregated the water-oriented population according to household types. Household type is a pattern variable created by combining information on the seasonality or permanence of respondents, and their property ownership status. Three types of household were thus defined: year-round residents (including both owners and non-owners), seasonal home owners, and seasonal non-owners. This breakdown was considered important for planning in the region, as it was a demographic characteristic that was undergoing change and potentially would prove useful in predicting social and environmental impacts in the region.

The three household types differed in their background characteristics, as shown in Table 1. Seasonal residents who owned northern Michigan property constituted the largest group of respondents, and are characterized as late middle-age, modestly affluent and well-educated. The second most prevalent group were year-round residents, most of whom owned their property, and were as a group late-middle age blue-collar workers with substantially lower incomes and educational attainment than other residents. The final group, seasonal residents who were either renting or borrowing the house in which they were interviewed, were similar in socioeconomic status to the seasonal owners, but younger and more likely to have children at home.

¹ Robinson reports several exploratory methodological studies in which correlations on the order of .85 were found in the aggregate time estimates from "yesterday" and "tomorrow" approaches [19, p. 11]. Robinson concludes that the 50-75 per cent greater field costs and higher refusal rates of the tomorrow approach outweigh its modest advantage in accuracy.

Table 1. Background Characteristics of Respondents^a

<i>Characteristic</i>	<i>Year Round Residents</i>	<i>Seasonal Home Owners</i>	<i>Seasonal Non-Owners</i>
Average family income	\$10,800	\$20,700	\$17,900
Per cent college degree	19	38	30
Per cent heads upper white collar	28	49	45
Medium age of household head	53	57	45
Per cent heads retired	37	28	10
Per cent with children at home	30	33	53
Number of respondents	255	408	163

^a These data are for the entire sample of 826 respondents, 727 of whom completed the time budget.

Time Use by Different Types of Household

As shown in Table 2, there were many significant differences between the three household groups in their daily activities. For a number of reasons, it might have been anticipated that the three groups of households would have different activity patterns. First, those individuals whose main residence was in the area could be expected to have less free time due to work, household and community demands. Further, due to the energy drain of these obligations, their free time behavior might be expected to be less active. For the most part, second-home owners would not have work obligations, but their free time would be partially absorbed by work on house and lot, by equipment maintenance, and by social contacts emerging out of the more complex (relative to seasonal non-owners) social matrix in which they exist. In addition, second-home owners' free time activities would be of a more passive character than those of the seasonal non-owners due to their expectations of a longer time period over which to spread their desired active recreational behavior (seasonal owners averaged eight weeks in residence, while non-owners average three). Seasonal non-owners, for their part, could have been expected to have the most leisure time as well as the largest proportion of time for outdoor recreation. Not only would they be in a more novel setting than the other two groups, but they would have less time in which to experience it, they would be less absorbed in alternative activities such as house maintenance, and their immediate setting — the cottage and its lot — would generally provide a less inviting alternative to outdoor recreation.²

² For example, crowding may have been a problem for seasonal non-owners. Houses in which seasonal non-owners lived were smaller than those of the other two groups, with an average of 4.4 rooms as opposed to the 5.5 rooms for year-round residents and 5.3 for seasonal homeowners. While the average distance to the nearest house was 72 feet and 62 feet respectively for year-round residents and seasonal owners, it was 37 feet for seasonal non-owners.

Table 2. Primary Activities in the Reduced Categorization,
by Type of Household
(in minutes; figures in parentheses are standard deviations)

	<i>Year-Round Residents</i>	<i>Seasonal Home Owners</i>	<i>Seasonal Non-Owners</i>	<i>F-Value</i>	<i>Significance</i>
<u>Total Work</u>	<u>160 (257)</u>	<u>12 (79)</u>	<u>12 (70)</u>	<u>66.8</u>	***
Work outside home	119 (220)	6 (56)	8 (59)	55.5	***
Other employment	31 (115)	5 (51)	3 (31)	9.8	***
Travel for work	10 (25)	1 (7)	1 (5)	27.2	***
<u>Total Housework</u>	<u>198 (182)</u>	<u>185 (163)</u>	<u>68 (80)</u>	<u>35.9</u>	***
Food preparation and clean-up	57 (83)	48 (59)	36 (44)	4.7	**
Home chores	46 (77)	38 (84)	13 (30)	9.8	***
Gardening and animal care	21 (51)	8 (32)	1 (9)	14.6	***
House maintenance and repair	11 (72)	20 (80)	3 (18)	3.6	*
Lot maintenance and improvement	29 (87)	34 (83)	4 (23)	26.2	***
Other housework	34 (94)	37 (96)	11 (44)	4.6	**
<u>Total Child Care</u>	<u>16 (45)</u>	<u>15 (46)</u>	<u>24 (65)</u>	<u>2.0</u>	N.S.
<u>Total Shopping and Services</u>	<u>44 (78)</u>	<u>82 (104)</u>	<u>64 (79)</u>	<u>12.3</u>	***
Shopping	22 (44)	42 (68)	41 (55)	9.7	***
Services and other	7 (25)	14 (42)	3 (13)	6.2	***
Travel for shopping and services	15 (30)	26 (38)	20 (28)	7.3	***
<u>Total Personal Needs</u>	<u>636 (119)</u>	<u>708 (112)</u>	<u>713 (129)</u>	<u>31.2</u>	***
Personal hygiene	38 (36)	41 (39)	45 (36)	1.4	N.S.
Home meals	85 (66)	99 (62)	86 (51)	4.6	**
Meals out	16 (37)	23 (44)	30 (48)	5.5	**
Night sleep	489 (106)	535 (85)	537 (99)	19.4	***
Other private needs	2 (11)	2 (13)	1 (5)	0.6	N.S.
Travel for personal needs	6 (20)	8 (22)	14 (33)	5.1	**
<u>Total Education and Civic/Organizational Participation</u>	<u>18 (57)</u>	<u>7 (30)</u>	<u>2 (11)</u>	<u>9.5</u>	***

* = < .05

** = < .01

*** = < .001

Table 2. (Cont'd.)

	<i>Year-Round Residents</i>	<i>Seasonal Home Owners</i>	<i>Seasonal Non-Owners</i>	<i>F-Value</i>	<i>Significance</i>
Total Social^a	79 (105)	93 (113)	62 (79)	4.7	**
Visit and entertain neighbors	17 (58)	25 (64)	11 (39)	3.4	*
Visit and entertain friends	15 (43)	16 (51)	20 (47)	0.5	N.S.
Visit and entertain relatives	18 (54)	25 (73)	7 (27)	4.4	*
Other informal gatherings	29 (64)	27 (56)	24 (47)	0.3	N.S.
Total Entertainment and Cultural	16 (51)	14 (39)	31 (71)	6.4	**
Total Sports and Active Leisure	56 (114)	92 (126)	202 (182)	54.7	***
Swimming	4 (19)	11 (32)	20 (42)	11.3	***
Fishing	19 (78)	20 (68)	76 (139)	23.0	***
Sailing, canoeing, rowing	—	6 (27)	8 (38)	5.9	**
Motorboating, Waterskiing	2 (27)	5 (30)	10 (33)	3.5	*
Other water sports	4 (24)	13 (40)	19 (44)	8.3	***
Outdoor nonwater ^b	12 (46)	14 (51)	22 (55)	1.9	N.S.
Walking, hiking, jogging	4 (15)	9 (27)	13 (37)	5.7	**
Pleasure driving	2 (11)	7 (33)	18 (55)	10.6	***
Other nonwater mobile ^c	3 (16)	2 (11)	5 (21)	2.7	N.S.
Travel for sports and active leisure	6 (34)	5 (23)	11 (23)	2.3	N.S.
Total Passive Leisure	207 (178)	223 (156)	254 (158)	3.7	**
Radio	6 (27)	3 (20)	5 (20)	0.7	N.S.
TV	78 (109)	62 (88)	39 (67)	8.4	***
Reading	41 (68)	54 (78)	42 (78)	2.6	N.S.
Relaxing and resting	49 (89)	71 (104)	114 (122)	18.5	***
Games	17 (55)	16 (53)	43 (102)	8.9	***
Other passive leisure	16 (44)	17 (48)	11 (36)	1.2	N.S.

* = < .05

** < .01

*** < .001

^a Includes travel associated with entertainment and cultural as well as social activities.^b Includes such activities as tennis, golf and picnicking.^c Includes such activities as bicycling and horseback riding.

Table 2. (Cont'd.)

	<i>Year-Round Residents</i>	<i>Seasonal Home Owners</i>	<i>Seasonal Non-Owners</i>	<i>F-Value</i>	<i>Significance</i>
Miscellaneous	10	9	8		
Total Free Time ^d	355 (212)	421 (178)	546 (185)	45.6	***
Total Time	1440	1440	1440		
Number of Respondents	244	337	146		

*** = < .001

^d Total Free Time includes Total Social, Total Entertainment and Cultural, Total Sports and Active Leisure, and Total Passive Leisure. The slight difference between Total Free Time as reported in this table and the sum of its component categories is caused by rounding.

It should be remembered that the household types differed in background factors which may influence the use of time. For example, seasonal non-owners on average were about ten years younger than either second-home owners or year-round residents, while both seasonal groups had higher incomes and more formal education than year-round residents. Thus, the importance of time use differences between household types should be accepted with circumspection. However, anticipating the following section, in multivariate analysis of outdoor recreation the household type variable was found to have relatively strong associations with time use, even after important background variables were taken into account.

Beginning with the summary measure of "Total Free Time" in Table 2, it is evident that the time use of the three groups was indeed different. On average, second-home owners devoted about an hour more to free time activities than did year-round residents. Seasonal non-owners, in turn, spent over two hours more in leisure activities than second-home owners and three hours more than their year-round neighbors.

Analysis of the specific activity classes provides information on the source of the differences in total free time. Neither seasonal group was up there to work, although work apparently tagged along with some of them. As expected, homeowners, whether permanent or seasonal, spend a good deal of their time in housework. It may be the case that certain aspects of housework are, in fact, voluntary and enjoyable and therefore function as recreation for vacation homeowners. The relatively larger amounts of time spent on house and lot maintenance and repair by second-home owners might lend some credence to this idea. On the other hand, it could be argued that second-home owners spent more time each day on property maintenance and repair not because they liked

it, but because they had to do it during the limited period they were in residence. Other data not tabulated here also cast doubt on the idea that housework is undertaken for recreation; an analysis of the residents' satisfaction with their daily activities showed housework to be one of the least pleasing parts of the day. The biggest difference between year-round residents and second-home owners within the housework activity class was in gardening and animal care. While gardening may be becoming a very popular activity, second-home owners were generally not in residence at their vacation homes long enough for both planting and harvesting.

Seasonal non-owners spent more of their day in child care than the other groups. This difference probably reflects age and life cycle differences between the categories of residents. Seasonal non-owners were the youngest group and over half of them had children at home, compared with a third of the year-round residents and second-home owners.

Both seasonal groups spent considerably more time in shopping and related activities than did year-round residents. The extra time may have been due to familiarity with stores and services and the greater distance from them, or it may be that shopping and services activity functioned partly as a leisure activity, absorbing some of the time freed by the absence of work. The study area is characterized by numerous summer shops and stores catering to seasonal residents. Furthermore, shopping time may also reflect income differences; the median family income of year-round residents was \$7,000 less than that of seasonal non-owners and nearly \$10,000 less than that of second-home owners.

The difference between households in their involvement in sports and active leisure are most striking. In fact, no time in indoor sports was recorded by the northern Michigan sample, so it will be more accurate to refer to time in sports and active leisure as outdoor recreation. Seasonal non-owners were more active than either of the other groups, though the magnitude of the differences is somewhat surprising. They spent two hours a day more than second-home owners and almost two and a half hours more than year-round residents in outdoor recreational pursuits. For all three groups the majority of outdoor recreation activity was water-related: 52 per cent for year-round residents, 60 per cent for second-home owners, and 66 per cent for seasonal non-owners. The dominant activity was fishing, with seasonal non-owners devoting an average of an hour and a quarter a day to angling. Seasonal homeowners and permanent residents were much less avid fishermen; both groups averaged 20 minutes per day in that recreational activity.

Another major activity class, passive leisure, showed the expected rise in average time comparing year-round residents, seasonal owners and seasonal non-owners. However, overall differences are less interesting than the comparisons of specific activities. First, television time for year-round residents averaged an hour and a quarter a day, only fourteen minutes less time than for the 1965 U.S. national sample. Considering that the northern Michigan survey was conducted

during the months of the year when outdoor activity is most appealing and when television is characterized by re-runs, the results are, at first glance, rather remarkable. Even under such conditions, television continues to be spell-binding. Clearly, these results must be tempered by consideration of the socio-economic and demographic differences between the groups. Seasonal homeowners spent about an hour a day watching television, and seasonal non-owners averaged about forty minutes. Finally, time spent relaxing and resting showed the expected relationships to household type, increasing from year-round residents across to seasonal non-owners. It is noteworthy that those who played the hardest, the seasonal non-owners, also spent the most time simply relaxing.

Factors Influencing Outdoor Recreation Behavior

In addition to describing how groups of people use their time, the time budget can be used to examine more carefully specific activities and the factors influencing peoples' participation in them. In the previous section significant differences in daily outdoor recreation time by the three household groups were demonstrated. As indicated, however, the groups also differed in background characteristics associated with outdoor recreation behavior and daily time allocation [19, 29, 30]. The purpose of the following multivariate analysis of outdoor recreation time is to see whether household type continues to be an important predictor of recreation behavior, once certain of these other factors have been taken into account.

Given the known interactive effects of gender on recreation participation, separate regression analyses were run for men and women. Multiple Classification Analysis (MCA) was selected as the analytical technique because it provides the necessary information on the independent effects of a given predictor when others are held constant, and is designed to accommodate predictor variables in as weak a form as nominal. Multiple Classification Analysis is analogous to dummy variable multiple regression, but the output is more easily interpreted [31].

Table 3 reports the results of the MCA of time spent in outdoor recreation. Figures in the table are the positive and negative deviations from the overall sample mean of the time use of particular subgroups, with other variables held constant. Independent variables selected for the analysis, in addition to household type, were chosen to represent three of the four major factors — personal, role, and resource — Robinson includes in his time use model [19].³

³ Environmental factors, Robinson's fourth factor, were excluded because of similarities in the geographical conditions of the sampled population, because data on weather were not readily available, and because previous analysis of this data indicated no significant day-of-week differences. Only a limited number of variables, in broad categories, were used, since the rule-of-thumb in MCA is that the number of cases should exceed the number of predictor categories by a factor of ten. Thus, with a completed time budget for 272 men, a maximum of 27 predictor categories was indicated.

Table 3. Prediction of Time Spent in Sports and Active Leisure
(Minutes per day above and below average)

	(N)	Women	(N)	Men
Total Sample Average	(455)	72 min.	(272)	150 min.
Standard Deviation		118 min.		172 min.
Multiple R ² (Variance explained)		0.09		0.26
Education of Respondent		beta ^a = 0.07		beta ^a = 0.18
Less than high school	(72) - 2		(61) + 44	
High school diploma	(136) - 3		(75) - 16	
Some college	(99) - 9		(42) - 48	
College degree or more	(128) + 6		(88) + 8	
Age of Respondent		beta = 0.10		beta = 0.17
18-34	(87) + 14		(34) - 35	
35-44	(88) + 1		(40) + 18	
45-54	(99) + 9		(45) + 32	
55-64	(96) - 4		(62) + 29	
65 or older	(83) - 22		(91) - 30	
Total Family Income		beta = 0.02		beta = 0.08
Less than \$10,000	(104) - 1		(73) + 8	
\$10,000-\$19,999	(137) - 3		(95) + 12	
\$20,000 or over	(157) + 4		(89) - 19	
Family Life Cycle		beta = 0.10		beta = 0.24
Head under age 45, no children at home	(26) + 33		(15) + 80	
Head married, youngest child at home under age 5	(54) - 12		(26) + 64	
Head married, youngest child at home aged 5-17	(130) + 9		(63) + 28	
Head age 45 or older, married, no children at home	(176) - 2		(147) - 22	
Head age 45 or older, not married, no children at home	(61) - 18		(17) - 87	
Household Type		beta = 0.26		beta = 0.44
Year round residents	(142) - 35		(111) - 71	
Seasonal owners	(226) + 1		(102) - 7	
Seasonal non-owners	(87) + 54		(59) + 134	

^a The Beta statistic "... provides a measure of the ability of the predictor to explain variation in the dependent variable after adjusting for the effects of all other predictors. This is *not* in terms of per cent of variance explained." [31, p. 7]

For women, with an average of seventy-two minutes per day spent in outdoor recreation, the most important predictor ($\beta = 0.26$) is household type. When the other predictors had been accounted for, female year-round residents spent thirty-five minutes less than the sample average in outdoor recreation, while women who were seasonal non-residents spent almost an hour (fifty-four minutes) more per day than the sample average in outdoor recreation. Among the background "control" variables, age showed the strongest effect, but its contribution to the explained variance was substantially smaller ($\beta = 0.10$) than that of household type. Overall for women, the predictors examined did not explain much of the variance in the amount of time devoted to outdoor recreation ($R^2 = .09$).

The variables included in this analysis did much better in explaining the daily recreation behavior of men ($R^2 = .26$). Once again, household type was an important predictor ($\beta = 0.44$) with over two hours more daily recreation participation shown by seasonal non-owners than by the sample average. Of the background variables in the equation for males, lifecycle ($\beta = 0.24$) was the strongest, although it was greatly outdistanced in predictive power by household type.

Thus, for both sexes, but particularly for men, time spent in outdoor recreation appears to be relatively strongly related to the type of residency. Seasonal residents who do not own their vacation house spend substantially more time in outdoor recreation activity than do seasonal home owners, and both groups spend more time in outdoor recreation than do year round residents. It may be that the seasonal non-owners feel they have less time to get in their yearly quota of outdoor recreation, or that they are not as involved in various obligatory household chores and neighborhood activities, or that they are simply more active people – whatever the reason, they spend more time in outdoor recreation. Other analyses using more conventional recreation participation measures have substantiated these time budget findings [1, 32].

These findings may have value in regional recreation planning. To the extent that the northern Michigan study area favors immigration of permanent residents, pressure on recreational facilities (at least in summer) will be less than if growth and development favors seasonal residents and particularly seasonal non-owners. To a large degree, of course, social and economic factors beyond the control of regional planners will drive development patterns; in that case, awareness of trends and prediction of impacts constitute the major value of the information. To some extent, local land use controls (e.g., density of development, setback from the water, sewage treatment) may work to favor one type of growth over another and thus to promote certain recreational activity patterns and their associated impacts.

CONCLUSIONS

This paper has presented arguments and illustrative data for the use of time budgets to study the recreation and other behaviors of dispersed populations. While the time budget provides relatively accurate measures of daily behaviors, and is particularly well-suited to measuring behavioral change in dispersed populations over time, it is often an expensive and cumbersome research technique to use. Nonetheless, it does offer recreation planners and researchers interested in peoples' allocation of daily time a valuable technique for describing and understanding behavioral phenomena. For many planning purposes descriptive data are of paramount importance. The "ruthlessly mundane" time budget can efficiently provide accurate information on the daily activity patterns of a generalizable sample of people. Such everyday behavior is the critical basis of many planning activities [23]. For researchers interested in developing models of human behavior, the time budget has the advantage of being a relatively non-reactive research technique that can provide quasi-observational information on probability samples of geographically dispersed populations and can set particular behaviors of interest in their daily context.

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