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# Operations Analysis of Commercial Campgrounds in Connecticut

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# Operations Analysis of Commercial Campgrounds in Connecticut

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## FOREWORD

This report presents the Connecticut results of the first of a four phase regional project entitled, NEM-42, Economic Analysis of the Campground Market in the Northeast. The first phase deals with marketing practices, pricing, and supply of commercial firms. A survey of 39 Connecticut commercial campgrounds was conducted in 1971. The survey data provided the basic material used for the analysis presented in this report. A report of the Northeast regional results of phase I was published in 1974 (Bevins, et al. [2]). Phase II is aimed at the public campground sector and the regional results were published in 1972 (Bond, et al. [3]). Phase III focuses on camper demand to determine consumer responsiveness and participation patterns. At the state level, Connecticut conducted a camper survey at selected campgrounds in 1972. The results were reported by Gardner [7] and a publication is planned. A nationwide household survey on camper demand is being conducted in 1974 as a regional effort. Phase IV will integrate the research results from the other three phases and develop a comprehensive regional campground market evaluation.

## SUMMARY

Connecticut's campground industry is a small, but recreationally important segment of a large, economically significant national campground industry. Close proximity to major population centers is an advantage from the standpoint of camping demand. Connecticut's 43 campgrounds in 1971 supplied an equivalent of about 25 percent of the overall camping demand by Connecticut consumers. Another advantage is the opportunity for off-campground employment. Almost 90 percent of the operators had a second occupation in 1971. A primary drawback of operating a campground in suburbia's backyard is that resource costs are relatively high.

About 40 percent of the operators apparently entered the camping business directly by first planning and then locating a place to develop or buy a campground. The other 60 percent seem to have gotten into the business in a roundabout fashion. That is, they already had a place for another purpose and subsequently decided to use it for development of a campground.

More than a fourth of the campgrounds were in the process of transitional growth in 1971. Most of the growing firms were small (1-49 sites) and medium (50-99 sites) sized, moving up to medium and medium-large (100-199 sites) sizes, respectively.

One management problem that is particularly bothersome to recreational firms is occupancy fluctuation due to seasonal demand and leisure time periods. In 1970 the "open-for-business" season ran 150-180 days. Average occupancy rates varied from 30 percent on weekdays to 99 percent on holidays. To cope with business peaks and valleys, campgrounds may have to use differential fees, offer mid-week attractions, encourage commuter camping, and innovate flexible site-capacity arrangements.

Operations analysis indicates, as would be expected, that the largest campgrounds (size IV) have the greatest potential for providing highest net income. Estimates indicate that net cash incomes ranging from around \$3500 for size I firms to around \$35,000 for size IV firms could be realized according to 1970 costs, returns and occupancy rates. When non-cash costs are also taken into account, the advantages of large size become apparent. Cost economies associated with size show up in the use of capital resources in the form of depreciation and interest on capital. Firms with a large volume of business can usually use capital equipment and buildings more efficiently than firms with a small volume of business.

While cost economies can be gained from large volume, the gain could in some cases be at the expense of quality. If campgrounds increase volume too intensively, some impairment in quality of recreational experience and natural environment may occur. Variations in use-intensity were quite large among the different sized campgrounds and use-intensity may be inversely related to quality. For example, on a weekend day with 90 percent occupancy, size III firms had an estimated 7 persons per developed acre, while size IV firms had 22. Under the same conditions, size III firms had about 23 persons per toilet per day, while size IV firms had an estimated 81. While these use-intensity rates do not measure quality directly, they do suggest that large firms may need to be concerned with implementation of quality maintenance practices.

Based on the operations analysis, it appears that size III firms provide a compromise position between economies of large size and opportunities for recreational and environmental quality protection. Accordingly, a size III campground may be an appropriate goal toward which operators could aim to achieve compatibility between economic growth and environmental quality.

OPERATIONS ANALYSIS OF COMMERCIAL  
CAMPGROUNDS IN CONNECTICUT

Marvin Kottke<sup>1</sup>

INTRODUCTION

Near the outlying edges of urban-industrial sprawl, may seem an unlikely location for a viable campground business. Nevertheless, a growing number of privately-owned and a steady number of publicly-owned campgrounds give evidence of an emerging campground industry in Connecticut. As might be expected, the young and expanding industry may be experiencing a few growing pains along with progress. Operators are beginning to face more complex management problems each year as the industry matures.

Some of the larger campgrounds can expect as many as 1500-2000 campers a day to show up and occupy approximately 50 acres of space on summer weekends. It takes about \$200,000-\$275,000 capital investment to provide camping facilities for that volume of business. Even with that much invested, water and sewer capacities can become strained at potential daily use rates of 20-30 persons per toilet and 60-100 persons per shower on weekends. Planning for such operations may not be particularly challenging except that camping demand is extremely sporadic time-wise. The "open-for-business" season runs about 150-180 days per year with only about 15-20 days of heavy volume. Nevertheless, capital and labor must be geared to handle peak loads as well as slow periods.

The purpose of this report is to present the results of an economic analysis of campground operations. Information is provided on market, investment, profit and quality-improvement variables involved in managing a campground. One of the objectives is to set forth the conditions which must prevail for campgrounds to profitably provide recreation services for camping consumers. A second objective is to obtain estimates of resource use-intensity and to identify levels of operation which offer opportunities for compatibility between economic growth and environmental quality.

DIMENSIONS OF THE CAMPGROUND INDUSTRY

A general understanding of the extent and location of the market is a useful starting point for operations analysis. On the supply side, the market is nationwide with over 15,000 commercial and public campgrounds spread throughout the U. S. (Table 1). Connecticut had 43 commercial and 14 public campgrounds in 1971. On a regional basis, the Northeast has about as many commercial campgrounds (2116 in 1971) as other regions but much fewer public campgrounds (472 in 1971).

<sup>1</sup>Professor of Agricultural Economics. The helpful comments of Davis Folsom and the data collection assistance of Dale Gardner, Rudolph Schnabel, George Stickels and Marvin Thompson are gratefully acknowledged.

Table 1. Number of Campgrounds and Campsites in the Local, Regional and National Markets, 1971 and 1972 <sup>1</sup>

Area <sup>2</sup>	Campgrounds		Campsites	
	Commercial	Public	Commercial	Public
	(number)			
Connecticut	43	14	4,163	1,949
Northeast	2,116	472	149,653	40,884
West	2,031	2,919	107,019	99,262
Northcentral	2,196	2,077	165,586	95,227
South	2,322	1,145	111,826	50,602
U. S.	8,665	6,613	534,084	285,975

<sup>1</sup> Northeast and Connecticut data are for 1971 and are from Bond, et al. [3]. All other are for 1972 and are from Woodall's Directory [12].

<sup>2</sup> Northeast comprises 12 states: Conn., Del., Me., Md., Mass., N. H., N. J., N. Y., Pa., R. I., Vt. and W. Va.

West comprises 13 states: Alas., Ariz., Cal., Colo., Hi., Ida., Mont., Nev., N. Mex., Ore., Ut., Wash., and Wyo.

Northcentral comprises 12 states: Ill., Ia., Ind., Kan., Mich., Minn., Mo., Nebr., N. Dak., S. Dak., Ohio, and Wis.

South comprises 13 states and D. C.: Ala., Ark., Fla., Ga., Ky., La., Miss., N. C., Okla., S. C., Tenn., Tex., and Va.

Consumer demand, of course, originates in households and, therefore, is related to population distribution. Population is spatially concentrated in the Northeast region which means that nearby consumer demand is relatively strong. LaPage [8] estimates that 19 percent of all households were active campers in 1971. The propensity to camp was lowest (13 percent) for Northeastern households and highest (33 percent) for Western households. While the propensity to camp is relatively low in the Northeast, population mass is so large that camping demand is very strong.

#### The Place of Campgrounds in Suburbia's Backyard

Owning and operating a campground in Connecticut has advantages and disadvantages. One primary advantage is the close proximity to major population centers.<sup>1</sup> Moreover, short-distance camping trips may become especially popular as long as the current "energy crisis" prevails.<sup>2</sup> Another advantage is the opportunity for alternative employment in the sense that many operators can have another occupation besides running a campground to supplement their income. Almost 90 percent (33 out of 37) of the operators

<sup>1</sup> Moeller [9] found no association between campground growth and (1) distance from population centers and, (2) local population density. However, he suggests that more precise demand indices may have given different results.

<sup>2</sup> At least one chain campground company is looking toward the construction of "proximity campgrounds" near population centers according to a New York Times [4] article.

had another occupation in 1971 (Table 2). Thus, Connecticut offers a good camping market plus opportunities for off-campground employment. Conversely, close proximity to urban areas also means that resource costs are relatively high. Land values, construction costs and wages are all affected by competitive, alternative uses for resources in nearby urban-industrial communities. Whether the advantages of operating a campground in suburbia's backyard outweigh the disadvantages depends upon operator's management skill and objectives.

Table 2. Age and Occupation of Campground Operators, Connecticut, 1971

Item	Campground Size				All Operators
	I	II	III	IV	
Average age (yrs.)	43	49	50	44	47
Occupation	<u>Number of Operators</u>				
Full-time cg operator <sup>1</sup>		4			4
Profession, administration	2	3		2	7
Skilled labor, technicians	2	7	1		10
Sales, service		2	1	1	4
Farmer, contractor, business	1	6	2	3	12

<sup>1</sup>cg = campground.

#### Resources Employed and Revenue Generated by Commercial Campgrounds

The campground industry in Connecticut is still comparatively small and probably has not yet had an appreciable impact on resource use. The land area used by 43 campgrounds in 1971 was 4,317 acres (Table 3). About one-third of that was developed into camp sites and used for facilities. The industry's largest resource component was the \$5.2 million estimated capital value of land and buildings. Labor employment was relatively small with only 160 workers. Gross revenue was less than 10 percent (\$450,000) of capital invested, which implies that the rate of return to capital stock (net revenue as a percent of capital invested) may have been relatively low.

If we broaden our scope and look at the national level, the industry looms relatively large. It was an approximately \$59 million industry in 1971 in terms of gross annual revenue and nearly \$700 million in terms of capital value of land and buildings. Estimates indicate that over 500,000 acres of land were used and over 20,000 workers were employed by the campground industry in 1971. In other words, Connecticut's campground industry is a small, but recreationally important segment of a large, economically significant national industry.

#### Share of the Connecticut Camping Demand Absorbed Locally

As a local camping market, Connecticut campgrounds supply an equivalent of about 25 percent of the Connecticut consumers' overall demand for camping (Table 4). Obviously, the state's approximately 120,000 camping households would not want to spend all of their camping trips close to home, nevertheless the magnitude of camper demand relative to local supply suggests that a reservoir of potential demand expansion exists locally. However, to increase their share of the market, local campgrounds must be able to offer attractions and amenities comparable to those offered by "far-away" places.



Table 3. Estimates of the Commercial Campground Industry's Resource, Employment and Gross Revenue Dimensions, 1971<sup>1</sup>

Item	Unit	Connecticut	U. S.
Campgrounds	No.	43	8,665
Total land	Acres	4,317	556,780
Developed land	Acres	1,484	190,880
Capital value of land & bldgs.	\$	5,210,100	689,617,500
Capital value of equipment	\$	285,400	37,776,600
Labor employed	Hrs.	152,000	20,119,400
Labor employed <sup>2</sup>	No. workers	160	20,800
Gross annual revenue	\$	450,600	59,654,000

<sup>1</sup> Estimated by using data from the 1971 NEM-42 Commercial Campground Survey for Connecticut. Estimates for the U. S. were made by using the mean values from Connecticut data and therefore may be biased, although some bias has been removed by adjusting the U. S. values downward (-36%) because the average size of U. S. campgrounds is smaller than that for Connecticut (62 sites in U. S. vs. 97 sites in Conn.)

<sup>2</sup> Based on a 24-week employment period. Includes operator, family and hired labor.

Table 4. Connecticut Campground Industry's Estimated Share of the Local Market, 1971

Item	Number
Connecticut Camping Population	
Total households in Conn. <sup>1</sup>	950,000
Camping households (active) in 1971 <sup>2</sup>	120,700
Days camped per household per year <sup>3</sup>	13
(A) Camper-days per year	1,569,100
Camper Participation at Conn. Campgrounds <sup>4</sup>	
Conn. campground sites	6,112
Potential site-days (100% occupancy) per year <sup>5</sup>	1,100,100
(B) Camper-days (35% occupancy) per year	385,035
Percent B/A	25

<sup>1</sup> Source: U. S. Department of Commerce data [10]. Based on 1970 Conn. census population of 3,032,000 and on 3.19 persons per household.

<sup>2</sup> Based on an active camper rate of 12.7% of U. S. households reported by LaPage [8, pg. 6, Table 5].

<sup>3</sup> Based on 13 days of camping per U. S. household per year reported by LaPage [8, pg. 6]. Gardner's [7] study indicated 22 days per year for families camping in Connecticut.

<sup>4</sup> Includes both commercial and public campgrounds. Assumes campers from Conn. and out-of-state but predominantly from within state.

<sup>5</sup> Site-days = no. sites multiplied by days open (180).

## ENTRY AND GROWTH OF FIRMS

### Entry Rate

Entry of new commercial campground firms into the industry has been spectacular. In less than 10 years the number of campgrounds grew from 4 to 43 (Table 5). Since 1968 the rate of increase has averaged 16 percent per year. If that rate continues we can expect to have over 75 commercial campgrounds in Connecticut by 1976. Parenthetically, the number of public campgrounds has remained relatively constant at 14 since 1964.

### Process of Entry

Over half (59 percent) of the operators entered the campground business indirectly (Table 6). They were using or had intended to use the land for another purpose. An interesting original purpose for a few operators (16 percent) was to own some land for personal recreation. Apparently, they constructed a camping site and then decided to share their personal natural environment with others on a commercial basis.

About 40 percent entered directly. That is, they apparently first decided to enter the campground business and then sought a place to develop it. Some evidently built a campground immediately upon purchasing the land, while others purchased an existing campground. An important point about the process of entry is that nearly 60 percent of the campgrounds are in locations originally selected for some other purpose. Such locations may be perfectly suited for viable operations; however, future investors in campgrounds may be well-advised to conduct feasibility and market studies before selecting a location.

Table 5. Growth in the Number of Commercial Campgrounds in Connecticut, 1964-71

Year	Number of Commercial Campgrounds	Index of Growth (1968 = 100)
1964	4	14
1965	11	38
1966	19	65
1967	27	93
1968	29	100
1969	35	120
1970	40	138
1971	43	148

### Transitional Growth of Firms

Not only are new firms entering the industry, but the existing ones are also becoming larger. For example, 11 out of 39 campgrounds surveyed in 1971 were in a process of transition (Table 7). That is, 11 were making changes that would move them into a different size class in 1971. Eight grew from size II to size III indicating a tendency of moderately-sized firms becoming larger firms. One large firm moved down in

size; however, this should not be interpreted as a general pattern for large campgrounds since size Class IV is open-ended (i.e., size IV includes firms with 200 or more sites). Actually some of the large firms also grew larger. Entry of new firms is not shown in the table because the 1971 survey sample did not include the 1971 entrants. While the transitional data are sketchy, they do suggest a movement towards size III which is 100-199 sites.

Table 6. Process of Entry into the Connecticut Campground Industry

Process	Campground Operators	
	(number)	(percent)
Direct entry <sup>1</sup>		
Owned land prior to time of entry	6	16
Purchased land at time of entry	5	14
Purchased an existing campground	<u>4</u>	<u>11</u>
	15	41
Indirect entry <sup>2</sup>		
Owned land prior to time of entry for the purpose of:		
farming	4	11
personal recreation	6	16
miscellaneous purposes	<u>12</u>	<u>32</u>
	22	59
Total	37	100

<sup>1</sup>Originally invested in land for the purpose of entering the campground business.

<sup>2</sup>Originally invested in the land for a purpose other than entering the campground business.

Table 7. Transitional Growth of Campgrounds, Connecticut, 1970-71

Size Class in 1970 <sup>1</sup>	Size Class in 1971				Total
	I	II	III	IV	
	(number of campgrounds)				
I (small)	3	2			5
II (medium)		15	8		23
III (med.-large)			5		5
IV (large)			1	5	6
Total	3	17	14	5	39

<sup>1</sup>Size class is based on number sites per campground: I = 1-49 sites; II = 50-99 sites; III = 100-199 sites; IV = 200 + sites.

## OPERATIONS MANAGEMENT FOR PROFIT

### Coping with Business Peaks and Valleys

Business volume in camping is concentrated in three months of the year and fluctuates between weekend highs and mid-week lows. In 1970 the "open-for-business" season ran from about 150 days for size I firms to 180 days for size IV firms (Table 8). A few stayed open longer (200-220 days) than average; however, the prospects for a year-round campground business appear rather dim. Consequently, a basic management problem is to find ways to maximize occupancy rates during the relatively short season.<sup>1</sup>

Average occupancy rates in 1970 varied from a low of 30 percent on weekdays to a high of 99 percent on holidays (Table 8). Graphically, a typical camping season has three major peaks representing Memorial Day, Fourth of July and Labor Day holidays, as shown in Figure 1. An assortment of minor peaks representing weekends occurs throughout June, July and August (the 4 or 5 weekends in each month are lumped together in the figure).

A management strategy to spread the flow of business more evenly is to use differential fees (higher fees on weekends than during the week).<sup>2</sup> Another strategy is to offer midweek attractions and encourage part-time camping by families where the wage earner commutes to work each day from the campground while the family camps.

To cope with the three peak demand periods, operators should consider providing attractive overflow areas to which self-contained camper vehicles could be assigned at a reduced fee. Of course, a reservation system helps to maintain occupancy control and may also help spread occupancy more evenly through time.

While seasonality and weekday valleys are a difficult management problem the probability of adverse weather can be a worse problem. Cold, rainy weather can seriously reduce occupancy rates thereby possibly off-setting good management practices. Obviously, management cannot control the weather, but management can strive to reduce the peaks and raise the valleys of business volume.

### Planning for Income Commensurate with Size of Operations

Gross income from camping fees varies among campgrounds and depends largely on occupancy rates and size of campground. Based on 1970 survey data, average gross income potentials ranged from roughly \$5000 for size I to over \$50,000 for size IV campgrounds (Table 9).<sup>3</sup> Obviously, larger campgrounds have greater gross income potential.

<sup>1</sup>"Occupancy rate" is a ratio of units occupied to total capacity which the lodging and recreation industries use to measure relative business volume.

<sup>2</sup>A study of camper demand response to differential pricing was conducted for the Department of Agricultural Economics, University of Connecticut, by Gardner [7] in 1972. A report of the results will be forthcoming in the near future.

<sup>3</sup>These gross income levels are not what Connecticut campgrounds necessarily attained but rather what they could have attained on an average occupancy rate basis for each size group. Although the survey was taken in 1971, the income and occupancy data obtained were for 1970 operations.

Table 8. Average Length of Camping Season and Occupancy Rates, Connecticut, 1970

Campground Size	Average Length of Season (days open)	Average Occupancy Rates			
		Whole Season	June, July & August		
			Week-days	Week-ends	Holidays
I	153	31	30	53	90
II	160	33	35	60	87
III	180	37	48	64	99
IV	180	38	49	74	89

Table 9. Potential Gross Income by Size of Campground, Connecticut, 1970 <sup>1</sup>

Campground Size	Average Site-days <sup>2</sup> (number)	Average Site-fee (dollars)	Estimated Gross Income from Fees
I	1,762	3.00	5,286
II	3,671	3.00	11,013
III	8,374	3.20	26,797
IV	17,071	3.30	56,334

<sup>1</sup>Income from sources other than fees excluded.

<sup>2</sup>Estimated from average occupancy rates and number of sites for each size class.

More importantly than gross income, however, is net income or profit. Again, the largest campgrounds have the greatest potential for providing highest net income.<sup>1</sup> Our estimates indicate that net cash incomes of around \$3500 for size I firms to around \$35,000 for size IV firms could have been realized according to 1970 costs, returns and occupancy rates (Table 10). There appears to be evidences of economies and diseconomies of size in terms of cash costs.<sup>2</sup> Size III campgrounds seem to benefit from economies of size, whereas size IV has proportionately much higher cash costs than the other size classes which suggests diseconomies at the size IV level. An interesting switch between size III and IV occurred though, in the non-cash cost estimates. Apparently, size IV campgrounds obtain economies of size on buildings and equipment. Moreover, they rely less on unpaid family labor. As a result, the estimated non-cash costs for size IV firms were only slightly higher (\$14,977 vs. \$14,346) than for size III firms.

<sup>1</sup>A regression analysis made by Schnabel [11] in a Department of Agricultural Economics research project in 1972 gives some support to this contention. Two significant variables influencing net profit were "number of sites" and "percent occupancy." Schnabel's regression estimate is presented in Appendix A.

<sup>2</sup>"Economies of size," or more definitively, "increasing returns to scale," are said to occur when output can be increased without a proportionate increase in inputs. Indivisibility (lumpiness) of some inputs is usually the underlying cause. For a basic reference on this concept see, for example, Baumol [1, ch. 11].

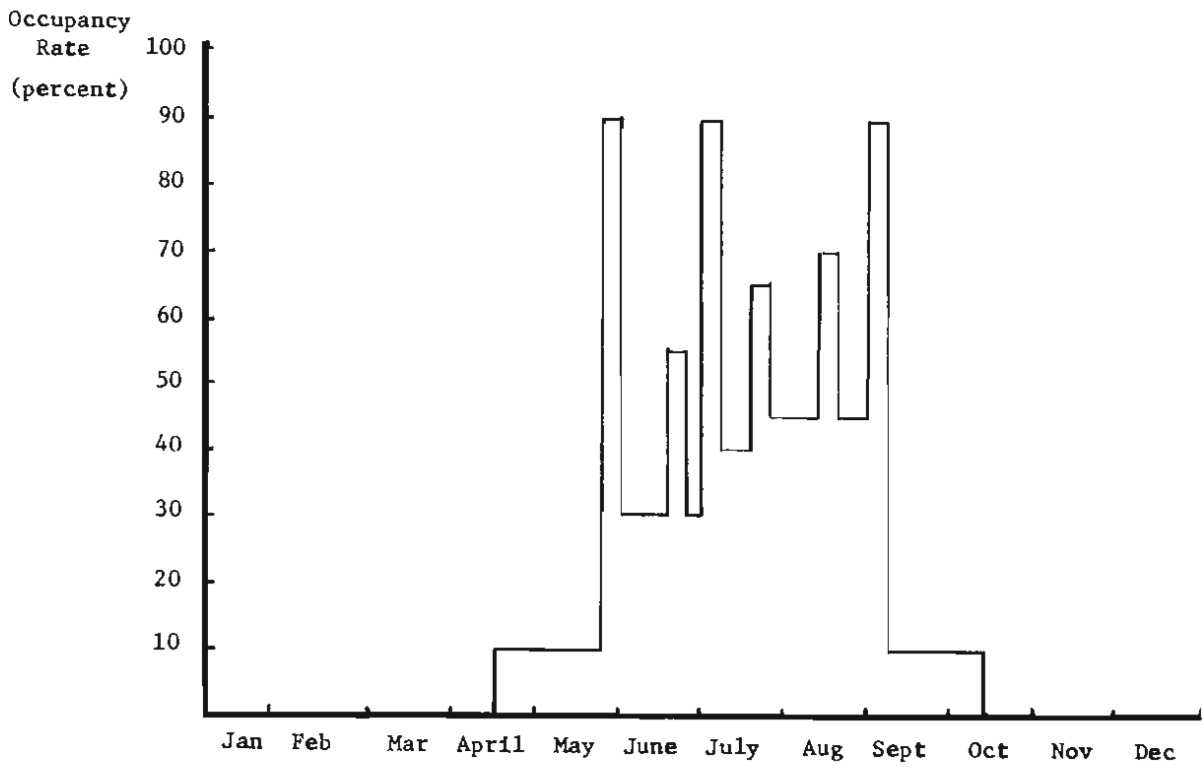


Figure 1. Approximate Seasonal Pattern of Occupancy Rates for Connecticut Campgrounds, 1970.

Table 10. Estimated Potential Gross Income, Costs and Net Income, Campground Operations, Connecticut, 1970

Item	Campground Size			
	I	II	III	IV
Gross income from fees <sup>1</sup>	\$ 5,286	\$11,013	\$26,797	\$56,334
Cash costs	<u>1,757</u>	<u>4,305</u>	<u>6,657</u>	<u>21,050</u>
Net cash income <sup>2</sup>	\$ 3,529	\$ 6,708	\$20,140	\$35,284
Non-cash costs				
Depreciation	\$ 1,008	\$ 1,380	\$ 2,646	\$ 3,735
Unpaid labor	4,080	6,560	8,000	5,920
Interest on capital <sup>3</sup>	<u>1,370</u>	<u>1,966</u>	<u>3,700</u>	<u>5,322</u>
	\$6,458	\$ 9,906	\$14,346	\$14,977
Net return to operator <sup>4</sup>	\$-2,929	\$-3,198	\$ 5,794	\$20,307

<sup>1</sup> Income other than from camping fees excluded.

<sup>2</sup> Return above cash costs.

<sup>3</sup> Opportunity cost of interest at 6% on the capital value of buildings and equipment. Credit interest is excluded from cash costs. Opportunity cost of interest on the value of land resources is assumed to be offset by appreciation in land values, therefore both values are omitted.

<sup>4</sup> Return to management and operator's labor after all other costs are accounted for and deducted.

In the long run, what is important is the "bottom line" which is "net return to operator" in this case. Our estimates cast doubt on the profitability of size I and size II campgrounds. In the short run, as beginning firms or part-time supplemental income sources, these small firms may be economically viable. That is, as long as the non-cash costs (depreciation, family labor and opportunity-cost interest) can be avoided, diverted or absorbed a small campground can survive and provide a small-to-moderate amount of cash income (\$3500-\$6700 approximately). For a summer job in an enjoyable environment, such pay may be sufficiently satisfying to attract people to invest in small campgrounds. Moreover, at recent rates of inflation, investment in land provides an inflation hedge which can be a positive element to add to cash income.

On the other hand, if a firm is to be a full-scale, profitable campground, it must be managed to gain sufficient volume to more than cover all costs (cash and non-cash) in the long run. According to our estimates, this means aiming for size III or size IV, maintaining control over cash costs and taking advantage of economies of size as much as possible.

## OPERATIONS MANAGEMENT FOR RECREATION AND ENVIRONMENTAL QUALITY

Although we stress the economic importance of large volume and efficiency of operations, we also realize that firms can become too large from the standpoint of quality of recreation-experiences and the natural environment.<sup>1</sup> If campgrounds increase volume too intensively, conditions for campers can change from a quiet, relaxed communion with nature or social experience to a hurried, frustrated carnival or mob experience. High use-intensity can lead to people congestion, to waiting-in-line, to over-use and abuse of facilities, to possible desecration of natural resources and to a distorted public image of camping's recreational qualities.

Fortunately, the problem can be resolved by developing campground operations that are compatible with protecting environmental quality. It should be possible for campgrounds to grow large and yet devise ways of dispersing campers and facilities to attain some optimal intensity of resource use.

Some understanding of typical use-intensity rates in camping may be useful in planning for quality improvement. Average use-intensity rates for land and a few selected facilities on Connecticut campgrounds are shown in Table 11. Spacing of sites ran about 2 sites per developed acre for all size classes, except size IV which averaged 6 sites per developed acre.<sup>2</sup> Close spacing, of course, helps to minimize investment outlay for water and electrical installations. Spacing too closely, though may cause people congestion and camper dissatisfaction. The potential for such problems can be seen by looking at people intensity estimates. On a weekend day (90% occupancy), a size III campground probably has about 450 persons, and size IV has about 1,750 persons on the premises as guests. On weekdays, attendance drops to about 170 and 680 persons, respectively. These are relatively small crowds when compared with spectator sports attendance figures; however, they are relatively large crowds where one of the objectives of the participants is to "get-away from it all" and enjoy the outdoors. A campground must be able to disperse such crowds using intervening parcels of natural resources and yet provide efficient, comfortable facilities using centralizing blocks of capital resources. On a weekend day with 90% occupancy, campers were generally dispersed at the rate of 5-8 persons per developed acre on size I, II and III campgrounds. In contrast, campers were rather concentrated at about 21 persons per developed acre on the size IV campgrounds.

Most of the campgrounds provided toilets at the rate of around 1 toilet per 6 sites, except size IV which averaged 1 toilet per 11 sites (Table 11). Showers were provided at about 2-5 per campground, except size IV which averaged 8 showers. While the number of persons using a campground's toilet and shower facilities cannot be determined on the basis of occupancy rates (because some camper-vehicles have self-contained toilets and showers),<sup>3</sup> it is interesting to examine the relative potential use-intensity rates among the four size classes. Toilets in the small to medium-large

<sup>1</sup> Concern for quality is aimed at two aspects of camping. One is quality of the recreation-experience (the activity) and the other is quality of the natural environment (the resources). The two are related and the discussion is addressed to both in this section. For further discussion of recreation quality, see Clawson and Knetsch [5, ch. 9].

<sup>2</sup> Within the developed land area, some acres are used more intensively than others. Actually, sites may be concentrated in a part of the developed area at a rate of up to 15 sites per acre. See Appendix B for state regulations regarding campground development.

<sup>3</sup> According to a Department of Agricultural Economics study in 1972 by Gardner [7], 10 percent of the Connecticut campers had pick-up-campers and motor homes in 1972.



Table 11. Average Intensity of Land and Facility Use, Connecticut Campgrounds, 1970

Item	Campground Size			
	I	II	III	IV
<u>Land resources</u>				
Total land per cg <sup>1</sup> (acres)	71.4	95.0	147.3	114.3
Developed land per cg (acres)	25.2	28.3	71.8	41.2
Sites per acre of developed land	1.4	2.4	1.8	6.0
<u>Occupancy levels</u>				
Persons per cg per day at: <sup>2</sup>				
100% occupancy	144	276	504	1,952
90%     "	130	248	454	1,757
35%     "	50	97	176	683
Persons per cg per year at ave. rate occupancy <sup>3</sup>	7,048	14,684	33,496	68,284
<u>Toilet and shower facilities</u>				
Flush toilets per cg	4.6	9.0	15.3	19.6
Pit toilets per cg	1.4	4.2	4.5	2.0
Sites per toilet per cg <sup>4</sup>	6.1	5.2	6.4	11.5
Showers per cg	2.0	2.6	4.5	8.4
<u>Intensity of use at 90% occupancy</u>				
Persons per acre per day <sup>5</sup>	5.0	8.6	6.5	21.6
Persons per toilet per day <sup>4</sup>	21.7	18.8	22.9	81.3
Persons per shower per day	65.0	95.4	100.9	209.2
<u>Intensity of use at 35% occupancy</u>				
Persons per acre per day <sup>5</sup>	2.0	3.4	2.5	8.4
Persons per toilet per day <sup>4</sup>	8.3	7.3	8.9	31.6
Persons per shower per day	25.0	37.3	39.1	81.3

<sup>1</sup>cg = campground.

<sup>2</sup>Assuming number of persons per site = 4.

<sup>3</sup>Average occupancy rates as reported in Table 8 and average site-days as reported in Table 9.

<sup>4</sup>Includes both flush and pit toilets.

<sup>5</sup>Applies to developed land.

campgrounds were available at a rate of potentially 20 persons per toilet, whereas those in the largest size campground had a potential use of about 80 persons per toilet on 90% occupancy days. Potential use-intensity for showers ran very high (65-200 persons per shower per day on 90% occupancy days). However, actual use probably runs much lower than our estimates because all campers do not shower every day and as mentioned previously, some provide their own shower facilities in recreation vehicles.

On the basis of use-intensity measures, small and medium-large campgrounds may be less prone than large campgrounds to diminish recreational and environmental quality. At least, it would seem that the high use-intensity estimates for size IV firms would indicate that large campgrounds, especially, may need to take precautionary measures to avoid environmental degradation and decline in quality of recreation experience. To a large extent, certain capital improvements, such as proper sewer facilities, well-designed nature trails, soil conserving materials, and strategically located camp sites can actually enhance quality. It is possible, therefore, for a large campground with high use-intensity to nevertheless rate high on quality. Conversely, a small campground with meager facilities, poor design and improper location can degrade the environment and diminish recreational quality. Obviously, many Connecticut campgrounds, whether large or small, offer opportunities for recreation-experiences and protect environmental quality.

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APPENDIX A

A linear regression estimate was made of the relationship between net profit from campground operations and several independent variables. The study was made by Schnabel [11] in 1972 as a research project in the Department of Agricultural Economics. Among several models tested, one that gave fairly good results was as follows:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4$$

where

Y = annual net profit

X<sub>1</sub> = number of sites per campground

X<sub>2</sub> = daily fee for use of site

X<sub>3</sub> = percent occupancy (weight average for June, July, and August)

X<sub>4</sub> = proximity to public campgrounds and selected tourist attractions (index)

a = intercept parameter

b<sub>i</sub> = coefficients (i = 1, 2, 3, and 4)

Data were obtained from the 1971 Connecticut Campground Survey. Data from 22 campgrounds were used in the equation. The results of the regression analysis were as follows:

$$Y = -19683.28 + 51.36 X_1 + 3134.77 X_2 + 118.7 X_3 + 900.33 X_4$$

Tests of significance:

(a) Student T-Test results

X<sub>1</sub> 4.21 significant at 2% probability level

X<sub>2</sub> 1.30

X<sub>3</sub> 2.70 significant at 10% probability level

X<sub>4</sub> 1.15

(b) F-Test 9.04 (critical value = 4.67 at 1% level)

(c) R<sup>2</sup> 68%

The results suggest that if one were to use the four independent variables to estimate the prospects for campground net income, two variables (number of sites, X<sub>1</sub>, and percent occupancy, X<sub>3</sub>) could be used with an acceptable degree of confidence. However, it should be cautioned that only a relatively small amount of the variation in net profit among the 22 campgrounds was explained by the four variables (R<sup>2</sup> = 68%).

As an example of an application of the estimating equation, we assume that an operator wants to estimate his future net profit. Suppose the operator has increased his sites to 100, raised the fee to \$4.00, and expects an increase in occupancy (June, July, August) to 60%. The campground has a rating of 3 for proximity to tourist attractions or public campgrounds (rating scale goes from 0 to 5+ with zero poor and 5+ good). By plugging the data into the equation the operator would obtain

$$\begin{aligned} Y &= -19683.28 + 51.36(100) + 3134.77(4.00) + 118.7(60) + 900.33(3) \\ &= 7814.79 \end{aligned}$$

Thus, the estimated net profit is \$7815. Of course, this is not a foolproof method of estimating net profit. In most cases it would be more appropriate to construct a budget of costs and returns for individual situations. The estimating equation's principal value is to show the importance of profit-influencing variables and to provide an estimate for campgrounds in general.

#### APPENDIX B

The following regulations regarding campground development apply in the State of Connecticut [6]:

1. The number of camp sites shall be limited to not more than fifteen per suitable acre, except for overnight stops.
2. The water available shall be one hundred gallons per day, per camp site, with a peak flow of thirty-five gallons per hour, per camp site, at a low pressure of at least twenty pounds per square inch at all service connections.
3. No camp site shall be located at a distance greater than three hundred feet from sanitary facilities, except remote camp sites.
4. An adequate number of fly-tight metal or heavy, plastic containers for refuse shall be provided and conspicuously located within one hundred feet of each camp site.

Appendix Table 1. Estimated Annual Cash Costs per Site, Connecticut Campgrounds, 1970

Item	Campground Size			
	I	II	III	IV
	<u>Dollars per Camp Site</u>			
Electricity	3.5	3.5	3.5	4.5
Propane	1.0	1.0	1.0	1.0
Automotive	5.0	5.0	4.0	4.0
Maintenance	2.0	3.0	5.0	5.0
Supplies & misc.	4.0	4.0	4.0	13.0
Telephone	2.0	1.5	1.0	1.0
Dues	2.3	1.2	0.7	0.5
Advertising	4.0	5.0	3.0	5.0
Taxes	14.0	9.0	5.0	6.0
Insurance	11.0	6.0	5.0	10.0
Paid labor	0.0	23.0	21.0	35.0

Appendix Table 2. Estimated Capital Resources, Depreciation, and Interest, Connecticut Campgrounds, 1970 <sup>1</sup>

Item	Campground Size			
	I	II	III	IV
<u>Inventory values</u>	<u>Dollars</u>			
Buildings	20,330	27,480	51,660	76,200
Equipment	2,500	5,280	10,000	12,500
Land	73,970	68,710	71,670	161,300
Total	96,800	101,470	133,330	250,000
<u>Depreciation per site</u>				
Buildings & equipment	28	20	21	15
<u>Interest per site (at 6%)</u>				
Buildings & equipment	38	28	29	21

<sup>1</sup>All data are estimates which were obtained by standardizing averages for Connecticut campgrounds in the 1971 survey.

Appendix Table 3. Estimated Labor Inputs and Costs, Connecticut Campgrounds, 1970 <sup>1</sup>

Item	Campground Size			
	I	II	III	IV
<u>Labor inputs</u>				
	<u>40 Hr. Week Equivalents</u>			
Unpaid operator labor	19	34	47	53
Unpaid family labor	27	41	50	37
Hired labor	0	8	13	43
Total	46	83	110	133
	<u>Hours</u>			
Unpaid operator labor	760	1360	1880	2120
Unpaid family labor	1080	1640	2000	1480
Hired labor	0	320	520	1720
Unpaid labor per site	51	44	31	15
Hired labor per site	0	5	4	7
<u>Labor costs</u>				
	<u>Dollars</u>			
Unpaid operator labor (\$6/hr.)	4560	8160	11280	12720
Unpaid family labor (\$4/hr.)	4080	6560	8000	5920
Hired labor (\$5/hr.)	0	1600	2600	8600
Unpaid labor per site	240	211	154	75
Hired labor per site	0	25	20	35

<sup>1</sup> All data except hourly wage rates are estimates obtained from averages for Connecticut campgrounds in the 1971 survey. The hourly wage rates are arbitrary estimates.

Appendix Table 4. Facilities Available by Size of Campground, Connecticut, 1970

Item	Campground Size			
	I	II	III	IV
Flush toilets (no.)	4.6	9.0	15.3	19.6
Pit " (no.)	1.4	4.2	4.5	2.0
Dumping stations (no.)	0.8	0.9	1.5	1.4
Hot showers (no.)	2.0	2.6	4.5	8.4
Swimming pool (% having)	20.0	32.0	0.0	20.0
Swim area (% having)	80.0	68.0	100.0	83.0
Recreation hall (% having)	20.0	32.0	75.0	83.0
Store (% having)	60.0	68.0	75.0	83.0
Playground (% having)	40.0	36.0	50.0	50.0
Auto washers & dryers (% having)	20.0	20.0	63.0	50.0
Firewood (% having)	80.0	77.0	100.0	100.0