REGIONAL IMPACTS OF RECREATIONAL EXPENDITURES AT TWO OKLAHOMA LAKES

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The major purpose of this study was to determine the direct economic impact of expenditures by recreationists at an urban-oriented lake (Lake Keystone) and a rural-based lake (Lake Tenkiller) in eastern Oklahoma. Recreationists were interviewed and socio-economic data obtained for analysis. Recreation attendance has increased dramatically in recent years, to over 5 million visitor days at Lake Tenkiller and to 3.6 million visitor days at Lake Keystone in 1974. Total expenditures per visitor day were $8.37 for Lake Tenkiller and $6.27 for Lake Keystone in the May-September "tourist" season of 1975. Thus direct regional economic impacts from recreation at the lakes are $31.8 million for Lake Tenkiller and $13.6 million for Lake Keystone for this period.

Oklahoma has become a water mecca for recreationists, with the completion of 20 lakes and locks and dams by the Corps of Engineers, 6 lakes by the Bureau of Reclamation, and over 1700 detention structures by the Soil Conservation Service.

Recreation attendance has increased dramatically in recent years. Annual visitations at Corps of Engineer lakes, measured in visitor days, were 12.8 million in 1960, 21.9 million in 1970, and 32.0 million in 1974. Based on attendance data through September, the 1975 recreation visitations at Corps lakes in Oklahoma likely will exceed 34 million. Although attendance at state parks has stabilized in the 16-17 million visitor days range annually for the last few years, this figure has doubled since 1958, when records were first maintained.

The major purpose of this study was to determine the economic impact of expenditures by both in-state and out-of-state recreationists as they utilize the recreation facilities around selected Corps of Engineer lakes. The lakes selected for study were Oologah, Keystone, Ft. Gibson, Tenkiller, Eufaula, and the lakes and locks and dams on the Verdigris and Arkansas Rivers which are included in the Oklahoma portion of the McClellan-Kerr Arkansas River Navigation System. These include W. D. Mayo Lock and Dam, Chouteau Lock and Dam, Newt Graham Lock and Dam, Webbers Falls Lock and Dam, and Robert S. Kerr Lake.

METHODS

A statistical sample was selected, based on 1973 and 1974 recreational visitations for Lake Tenkiller and Lake Keystone. On-site interviews were made with 392 recreation groups in 1974 and 344 groups in 1975. Each of these interviews included detailed socio-economic information and expenditure data for the group; about 30 minutes were required to complete the interview. Four trained Oklahoma State University student interviewers did the personal interviews around the lakes from May to August in both 1974 and 1975.

The data were tabulated and analyzed both by individual lakes and aggregated for all lakes. Because of time limitations, only two of the lakes have been selected for comparison. Lake Keystone is located just west of Tulsa and is considered an urban-impacted lake. Lake Tenkiller is located in Sequoyah and Cherokee Counties in eastern Oklahoma, and is considered a rural-impacted lake.

Attendance data for the two lakes were tabulated by month and year to detect trends as well as seasonal patterns of attendance. Since the May-through-September visitations represent the major "tourist or use season" for these lakes, the recreation visitations for that period were used to estimate the aggregate economic impact of recreation at these lakes.

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Socioeconomic characteristics are assumed to have an impact on a person's participation in outdoor recreation. The role of several selected characteristics as they relate to participation in outdoor recreation at Tenkiller and Keystone lakes is discussed below. The differences between an urban-oriented day-use lake such as Keystone, because it is very close to Tulsa, and an extended-trip lake such as Tenkiller are readily apparent.

Any analysis of socioeconomic characteristics related to their impact on recreation participation rates must be tempered by a recognition of interdependence. For example, persons with higher levels of education are more likely to be professional or administrative workers; professionals or administrators are more likely to earn higher incomes; recreationists' incomes are likely to increase with age. It is probably a combination of different socioeconomic characteristics that have the final impact on recreationists' decisions to engage in outdoor recreation.

RESULTS

Lake Keystone was completed in 1964. Recreation attendance was 479,000 visitor days in 1964 and increased to 3,674,000 visitor days in 1974. Lake Tenkiller was completed in late 1952. Recreation attendance at that lake has increased from 552,300 visitor days in 1953 to over 5 million visitor days in 1974 (1).

Although most of the recreationists using the two lakes originate in Oklahoma, there are differences between the two lakes. In 1974 about 80 percent of the Tenkiller recreationists were from Oklahoma, while nearly 93 percent of the Keystone respondent were from Oklahoma, compared to 77 percent in-state users at Tenkiller and 89 percent in-state users at Keystone in 1975.

Keystone Lake is characterized by an extremely high level of localized use (*i.e.* 0-50 miles). Tenkiller Lake, on the other hand, is characterized by more evenly distributed visits over several distance zones (Table 1).

The number of persons in the average recreation group also differed between the two lakes. The average size group at Lake Tenkiller consisted of about 4.5 persons. The average size group at Lake Keystone was about 3.5 persons (Table 2).

TABLE 1. *Distance traveled by recreationists to Lake Tenkiller and Lake Keystone, 1974 and 1975.*

Miles traveled one-way	Lake Tenkiller 1974 (%)	Lake Tenkiller 1975 (%)	Lake Keystone 1974 (%)	Lake Keystone 1975 (%)
0— 50	20.6	17.6	76.8	74.3
51—100	26.5	31.6	9.8	8.6
101—150	14.5	14.5	6.2	6.6
151—200	24.8	19.7	2.3	4.6
200 and over	13.6	16.6	4.9	5.9
Total	100.0	100.0	100.0	100.0

TABLE 2. *Number of persons in recreational group at Lake Tenkiller and Lake Keystone, 1974*[a]

Size of Group	Lake Tenkiller (%)	Lake Keystone (%)
1	1.6	11.0
2	24.5	32.9
3	17.7	13.4
4	22.3	13.4
5	13.6	19.5
6	6.4	3.7
7 or more	13.9	6.1
Total	100.0	100.0

[a]1975 data for this variable were not tabulated at time of this writing. There is no reason to expect it to be very different.

TABLE 3. *Length of stay by recreational groups at Lake Tenkiller and Lake Keystone, 1974 and 1975.*

Length of trip	Lake Tenkiller 1974 (%)	Lake Tenkiller 1975 (%)	Lake Keystone 1974 (%)	Lake Keystone 1975 (%)
Less than a day	7.7	8.8	28.0	46.7
One day	2.9	1.0	12.2	1.3
Overnight	11.0	10.9	7.3	11.2
Two nights or more	78.4	79.3	52.5	40.8
Total	100.0	100.0	100.0	100.0

Keystone, located near a large urban area (Tulsa), is characterized by a high level of day use. Tenkiller, located a greater distance from large urban areas, is characterized by more long-term visitors (Table 3).

From 50 to 65 percent of all respondents reported household income in excess of $12,000 in 1974 and 1975 (Table 4). These figures can be compared with approximately 23 percent of Oklahoma residents

TABLE 4. *Annual household income of recreationists at Lake Tenkiller and Lake Keystone, 1974 and 1975.*

Income class	Tenkiller Lake 1974 (%)	Tenkiller Lake 1975 (%)	Keystone Lake 1974 (%)	Keystone Lake 1975 (%)
Under $3,000	2.3	5.2	2.4	3.3
$3,000— 4,999	1.6	1.6	7.3	4.6
$5,000— 6,999	5.5	6.7	9.8	7.2
$7,000— 8,999	7.4	5.2	11.0	6.6
$9,000—11,999	17.7	13.0	9.8	23.7
$12,000—14,999	24.2	18.1	20.7	21.1
$15,000—19,999	20.0	23.8	13.4	14.5
$20,000—29,999	13.6	19.7	17.1	8.5
$30,000 and over	3.2	4.1	7.3	4.6
No Response	4.5	2.6	1.2	5.9
Total	100.0	100.0	100.0	100.0

TABLE 5. *Employment classification for recreationists at Lake Tenkiller and Lake Keystone, 1974 and 1975.*

Employment classification	Lake Tenkiller 1974 (%)	Lake Tenkiller 1975 (%)	Keystone Lake 1974 (%)	Keystone Lake 1975 (%)
Professional	16.4	15.0	12.2	10.5
Manager, administrator	16.8	17.6	7.3	13.3
Sales, clerical	13.2	11.9	12.2	11.2
Craftsman	8.4	17.1	15.9	19.1
Laborer, operative	16.8	12.5	19.5	20.4
Service worker	8.4	9.9	8.5	4.0
Farmer	1.3	0.0	0.0	3.0
Retired	8.7	10.9	6.1	0.0
Not employed	0.6	0.5	0.0	2.6
Housewife	7.1	0.0	12.2	0.7
Student	1.3	3.1	2.4	11.2
Other	1.0	1.5	3.7	4.0
Total	100.0	100.0	100.0	100.0

TABLE 6. *Comparison of recreation visitor day expenditures and aggregate impact, Lakes Tenkiller and Keystone, 1974 and 1975.*

Expenditures category	Tenkiller 1974	Tenkiller 1975	Keystone 1974	Keystone 1975
Trip expenditures per visitor day				
Lodging	$0.28	$0.47	$0.06	$0.28
Food & beverages	2.92	3.83	3.54	2.94
Transportation	1.36	1.76	0.95	1.35
Recreation activities	0.30	0.70	0.23	0.93
Other	0.10	0.12	0.15	0.12
Subtotal	$4.96	$6.88	$4.93	$5.62
Annual expenditures per visitor day[a]	1.34	1.49	0.58	0.65
TOTAL	$6.30	$8.37	$5.51	$6.27
Visitor days (May—September)	3,484,100	3,790,800	2,823,700	2,175,400
Total expenditures ($1,000)				
Trip	$17,281	$26,136	$13,921	$12,225
Annual	4,669	5,660	1,638	1,414
TOTAL	$21,950	$31,796	$15,559	$13,639

[a]Annual expenditures include annual licenses for pickup campers, fishing, etc., as well as annual insurance costs and repair costs for recreational equipment.

in the same income category. The median household income level for the recreationists was in the $12,000 to $14,999 class. Oklahoma residents are characterized by median household income of $7,725. These findings are indicative of higher participation rates for water-based outdoor recreation by persons with higher incomes.

The employment data reflect a relatively similar distribution of occupations for both lakes (Table 5). On the average, the highest single participation level comes from the labor-operative classification. Other categories showing high rates of participation are professional, manager or administrator (especially at Tenkiller), and craftsmen (especially at Keystone). These classes are also higher-income occupations.

Trip expenditures per visitor day for recreationists were almost the same at the two lakes in 1974. However during the five-month peak recreation season in 1975, a much higher percentage of the recreationists at Lake Keystone were day users (Table 3). This caused a $1.26 spread ($6.88 -$5.62) in the expenditures for 1975, with Tenkiller recreationists spending more, primarily for food and beverages and transportation (Table 6). When annual expenditures on a per-visitor-day basis are added, the 1975 total expenditures per visitor day were $8.37 for Lake Tenkiller recreationists and $6.27 for Lake Keystone recreationists, compared to the 1974 figures of $6.30 and $5.51 for Lake Tenkiller and Lake Keystone, respectively.

The regional economic impacts of these two lakes are significant. Expenditure patterns may be different due to the change of recreational activities to a lower-cost activity (mostly sightseeing and fishing) during the "off-season" (October-April). Thus for measuring economic impact only the May-September visitations are used. Multiplying the visitor-days activity during this period by the total expenditures per visitor day shows $31.8 million of direct regional economic impacts from Lake Tenkiller and $13.6 million regional economic impacts from Lake Keystone for 1975. The Tenkiller impact is up almost 50 percent from 1974; however the Keystone impact is down, because of decline in recreational use of the Lake during the five-month period in 1975.

DISCUSSION

Recreational use of lakes in Oklahoma has increased significantly in recent years. Despite inflation, recessions, high rates of unemployment, shortages of fuel, and higher fuel prices in recent years, Oklahomans and out-of-state residents continue to recreate around our lakes in greater numbers each year (2). The amount of money spent by these recreationists also has increased; most of those expenditures have been incurred in Oklahoma since the great majority of recreationists at the two lakes included in this study are from Oklahoma.

Direct expenditure impacts are large, and generally are increasing for most lakes in the State, although Lake Keystone is an exception in 1975. The regional economic impact of recreational expenditures at just these two lakes for five months in 1975 is over $45 million, compared to $37.5 million in 1974. An objective of the overall study, which has not yet been accomplished, is to determine the secondary or indirect economic effects on various sectors of the regional economy. It is estimated that these effects will be 1.5 to 2.0 times the direct effects. Thus, it is readily apparent that the total economic effect of water and related land-based recreation at Oklahoma lakes is a significant factor in our economy today.

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