To the Graduate Council:

I am submitting herewith a thesis written by Joanne Freeman Nelson entitled "Assessing the Status of Recreation Services Using Need and Resource Indices for Blount County, Tennessee." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Recreation.

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Thesis
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ASSESSING THE STATUS OF RECREATION SERVICES USING NEED AND RESOURCE INDICES FOR BLOUNT COUNTY, TENNESSEE

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Joanne Freeman Nelson

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ABSTRACT

The study was concerned with assessing the recreation needs and recreation resources of the county census divisions of Blount County, Tennessee. By comparing the recreation needs to recreation resources the assessment was able to determine to what extent the needs were or were not met by the existing resources. The comparison had also accommodated a priority ranking of county divisions in order of need for future recreation services. This priority ranking was then able to be used to assist the Recreation and Parks Commission of Maryville-Alcoa-Blount County in decision-making regarding future program and facility development.

The assessment first required the identification of the factors indicative of recreation need; those need factors were determined to be youth population totals of ages nineteen and under, population density, median family income, and proximity to recreation facilities in excess of three miles. Secondly, the study identified the factors indicative of recreation resources: number of major recreation facilities, acreage of major recreation facilities, and number of recreation staff hours.

Data for each of the factors were converted into equitable scale scores. The comparable need factor scale scores were then added to form a recreation need index for each county division. Similarly, a recreation resource index was developed for each of the six county divisions. The indices were compared for each county division; the results of the subtraction of the need index from the resource index for each county division were placed in ascending numerical order.

This ordering had established the priority ranking of county divisions in need of future recreation services.

In the development of the recreation need indices, it was determined that Townsend ranked first with an index of 203. The need indices for the other county divisions were determined to be 202 for Maryville, 185 for Lanier, 164 for Wildwood, 128 for Friendsville, and 99 for Alcoa.

In the development of the recreation resource indices, it was determined that Alcoa ranked first with an index of 288. The resource indices for the other county divisions were determined to be 213 for Maryville, 63 for Friendsville, 29 for Townsend, 29 for Lanier, and 5 for Wildwood.

In the comparison of the need and resource indices for each county division, it was found that Townsend had the largest negative difference of -174. Consequently, Townsend had placed first in the priority ranking of county divisions in need of future recreation services. The rankings for the other county divisions were determined to be second for Wildwood, third for Lanier, fourth for Friendsville, fifth for Maryville, and sixth for Alcoa.

Conclusions were able to be drawn from both the index development and comparison procedures. Alcoa had an exceptionally higher number of recreation facilities, acreage of recreation facilities, and number of recreation staff hours per capita than any of the other county divisions. Conversely, Wildwood had an exceptionally lower number of recreation facilities, facility acreage, and number of staff hours per capita than most of the other county divisions. The end result of the comparison of indices indicated that Townsend, Wildwood, and Lanier

were the three county divisions determined to be in greatest need of future recreation services. Conversely, the county divisions of Friendsville, Maryville, and Alcoa were determined to be in no immediate need of future recreation services.

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CHAPTER I

INTRODUCTION

Recreation has been considered a key component of physical and mental health.[1] As one of many recreation professionals who subscribed to that philosophy, Brightbill wrote that the recreative use of leisure brings personal satisfaction and meaning to living.[2] Similarly, the recognition that park and recreation programs contribute to the economic and social well-being of communities has become widely accepted.[3] By 1965 American cities were reported as supporting 30,000 local park and recreation areas encompassing about 1,500,000 acres.[4] Hence, it has become evident that recreation and park services have been considered a legitimate responsibility of local government.

Heretofore, the provision of recreation and park services by local governments has required large expenditures to sustain professional staffs, acquire park lands, and develop programs and areas. Until recently, the resource growth had been considered adequate in meeting demand. In recent years even greater demands have been placed upon

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[1]United States Department of the Interior, National Urban Recreation Study (Washington: U. S. Government Printing Office, 1978), p. 4.

[2]Charles K. Brightbill, Man and Leisure (Westport, Connecticut: Greenwood Press, 1961), p. vi.

[3]United States Department of the Interior, p. 4.

[4]Richard F. Knapp, "The National Recreation Association, 1906-1950; Municipal Recreation: Background of an Era," Parks and Recreation, (August 1972), p. 16.

existing recreation resources.[5] As this pressure on facility use has continued to grow, recreation agencies have recognized the urgency in planning more facilities to meet the need. Accordingly, agencies have recognized the need for even greater investments than before.[6]

At the same time many local governments, and therefore public recreation departments, have experienced a period of budgetary crisis. A 1971 survey of city recreation agencies showed that 60 percent of the respondents had suffered unchanged budgets or, more severely, budget cuts in recent years. Worse yet, their operational costs had been sharply increasing.[7]

As competition for the tax dollar has become more intense, recreation agencies have been challenged to demonstrate their worth and to justify their expenditures for staff and facilities.[8] In view of the critical financial situation and the overwhelming resource demand, recreation and park agencies have realized the need for careful planning efforts. Planning to insure an efficient use of existing tax dollars for recreation and park services had become necessary. Knetsch noted that studies are needed to guide such planning efforts.[9]

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[5]H. Douglas Sessoms, "An Analysis of Selected Variables Affecting Outdoor Recreation Patterns," Social Forces, XLII, 1 (October 1963), 115.

[6]Jack L. Knetsch, "Assessing the Demand for Outdoor Recreation," Journal of Leisure Research, I, 1 (1969), 85.

[7]United States Department of Housing and Urban Development, Urban Recreation (Washington: U. S. Government Printing Office, 1974), p. 34.

[8]Edwin J. Staley, "Function of Research in Recreation Administration," Recreation Research (Washington: American Association for Health, Physical Education, and Recreation, 1966), p. 107.

[9]Knetsch, p. 85.

Most recreation professionals have agreed that too few studies have been available relating recreation to decision-making in developing recreation resources.[10] This trend was summarized by the Department of Housing and Urban Development in 1974.

> There is little that the government is doing to fill the gaps in knowledge within a decision-making system which annually allocates about two and a half billion dollars for parks and recreation.[11]

The Recreation and Parks Commission of Maryville-Alcoa-Blount County has encountered difficulties similar to trends cited: overwhelming resource demands and parallelling financial constraints. Slow budget growth has recently characterized the agency despite soaring operational expenses.[12] And yet, if the Commission is to contribute to the personal and community well-being, a commitment to resource and program development must be made. The administration's decisions regarding the direction and emphasis of such future development were critically important. This study was designed to assist in those decisions by assessing the existing recreation needs and resources and establishing a priority ranking of areas in order of recreation need.

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[10]Marion Clawson and Jack L. Knetsch, Economics of Outdoor Recreation (Baltimore: Johns Hopkins Press, 1966), p. 45.

[11]United States Department of Housing and Urban Development, p. 35.

[12]Telephone interview with Michael R. Crowson, Director, Recreation and Parks Commission of Maryville-Alcoa-Blount County, Maryville, Tennessee, 1 August 1978.

Statement of the Problem

The objective of the study was to assess the recreation needs and resources of the census divisions of Blount County, Tennessee. The study sought to determine to what extent the needs were or were not met by the existing resources.

In order to make this assessment, a comparison of needs to resources was required. To accomplish this comparison, a priority ranking system was developed using relevant recreation data according to census divisions. Therefore, to assess the status of recreation needs and recreation resources, the study became concerned with the following sub-problems:

1. Identifying those factors which were indicative of recreation need in a rural setting.
2. Identifying those factors which were indicative of recreation resources in a rural setting.
3. Developing a need index and a resource index for determining a priority ranking of the census divisions in order of recreation need.

Need for the Study

"Recreation for all" has been a concept popularly supported by public recreation agencies to emphasize equal opportunity in recreation participation.[13] Sessoms has suggested that recreation planners have

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[13]John A. Nesbitt, Paul D. Brown, and James F. Murphy (eds.), Recreation and Leisure Services for the Disadvantaged: Guidelines to Program Development and Related Readings (Philadelphia: Lea and Febiger, 1970), p. 3.

planned primarily with the mobile middle class in mind; they assumed that all Americans were like themselves. Consequently, the desires and needs of some of the people had been ignored due to the inflexibility and questionable use of current facility standards, which did not consider the impact of social variables.[14]

In order to be able to serve all the people, the recreation profession needed a stable foundation: sound research in these areas.[15] Specifically, ordered priorities have been needed to serve as a guideline for directing funding for equipment and development of recreation resources.[16] In a 1978 report, the Department of the Interior noted that many recreation master plans did not fully identify recreation resources nor did they effectively identify existing recreational deficiences.[17] Further, they conspicuously were without any periodic measurement systems to update the changing status of such variables.[18]

The study sought to fill those voids. Not only has the study examined the existing status of recreation needs and resources, but also it was designed to accommodate data adjustments for updating purposes.

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[14]H. Douglas Sessoms, "New Bases for Recreation Planning," Journal of American Institute of Planners, XXX, 1 (February 1964), 30.

[15]Genevieve W. Carter, "The Challenge of Research in Today's Society," Recreation Research (Washington: American Association for Health, Physical Education, and Recreation, 1966), p. 1.

[16]Knoxville-Knox County Metropolitan Planning Commission, Plan for Recreation and Open Space (Knoxville, Tennessee: Knoxville-Knox County Metropolitan Planning Commission, 1976), p. 77.

[17]United States Department of the Interior, p. 78.

[18]Ibid., p. 79.

Additionally, for the Recreation and Parks Commission the study was timely. The agency had provided recreation services for the three governments since 1970. The early 1970's were years of growth, both in resource development and financially. As evidenced in Table 1, budget size had increased at an average rate of 12 percent each year from 1970 to 1976. Since 1976, that rate had drastically slowed to a 6 percent increase in 1977 and a 4 percent increase in 1978.[19]

TABLE 1

BUDGET GROWTH FOR THE RECREATION AND PARKS COMMISSION

Fiscal Year	Budget	Percent of Increase
1970-1971	$248,716	
1971-1972	$264,121	6%
1972-1973	$295,550	12%
1973-1974	$351,025	19%
1974-1975	$394,710	12%
1975-1976	$435,710	10%
1976-1977	$501,635	15%
1977-1978	$529,810	6%
1978-1979	$550,240	4%

[19]Telephone interview with Diane G. Keller, Bookkeeper, Recreation and Parks Commission of Maryville-Alcoa-Blount County, Maryville, Tennessee, 15 August 1978.

The financial situation in recent years has been further aggravated by heightened maintenance and program expenses. Resource use, and therefore resource demand, has been at its highest peak. In light of the shrinking funds available, the Director of the Recreation and Parks Commission realized the significance of the decisions regarding the needed future development of resources to meet the demand. It was recognized by the agency's administration that research was necessary to assist in that decision-making process. Also, the Recreation and Parks Commission's desire to develop a master plan had further emphasized the need for research on which to base decision-making for both short- and long-range plans.[20] This study, the first comprehensive assessment of the recreation services ever completed in Blount County, Tennessee, was intended to meet that need.

Delimitations of the Study

The following delimitations of the study were recognized:

1. The study was concerned only with Blount County, Tennessee, which is essentially a rural county.
2. The assessment of recreation needs and recreation resources for Blount County was made on the basis of only six county census divisions, as established by the Bureau of the Census.
3. Although other recreation resources existed within Blount County (privately-owned operations such as theaters, bowling alleys, golf courses, and country clubs), only those resources

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[20] Crowson, 1 August 1978.

operated by the Recreation and Parks Commission of Maryville-Alcoa-Blount County were used in the study.

Limitations of the Study

The following limitations were recognized:

1. Data from the 1970 Bureau of the Census Report were the most recent demographic statistics available.
2. The political boundaries which determine the six census divisions were imaginary in terms of the factors under study. With the obvious exception of the proximity factor, no allowance was made for the populations' recreation opportunities in adjacent subdivisions.

Theoretical Framework

Assumptions of the Study

The following conditions concerning the problem were assumed:

1. The data from the 1970 Bureau of the Census Report were assumed to be reliable.
2. The results from the other studies referred to were assumed to be correct.
3. It was assumed that recreation need could be met through the provision of recreation resources.

Definition of Terms

Census or county divisions. As determined by the Bureau of the Census for reporting census statistics, the division of Blount County into six fairly uniform areas.

Need index. A quantitative representation of recreation need in a county division.

Park. An open area either landscaped or in its natural state, intended for outdoor recreation and the general enjoyment of nature. The distinctive feature of a park is the opportunity for passive recreation. Parks may contain specific use facilities as well.[21]

Planning. Designing a course of action to achieve ends; a defining of purposes and choosing means to attain them.[22]

Recreation. An activity or experience engaged in voluntarily which is inherently satisfying.[23]

Recreation demand. A measure of the kinds and amounts of recreation opportunities which the public desires.[24]

Recreation need. The unsatisfied demand for recreation opportunities.[25] Factors comprising recreation need include high population density, high youth population totals, low income, and distances in excess of three miles from recreation opportunities.

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[21]Charles Abrams, The Language of Cities (New York: Viking Press, 1971), p. 220.

[22]Seymour M. Gold, Urban Recreation Planning (Philadelphia: Lea and Febiger, 1973), p. 13.

[23]Nesbitt, Brown, and Murphy, p. 3.

[24]Tennessee Department of Conservation, Tennessee's Comprehensive Outdoor Recreation Plan (Nashville: Tennessee State Planning Commission, 1966), p. 15.

[25]Ibid.

Recreation resources. The physical capabilities of providing recreation opportunities.[26] Recreation resources include acreage and number of recreation facilities (parks, school gym centers, recreation centers, swimming pools, tennis courts, and ballfields) and professional recreation staff hours (indicative of program efforts).

Resource index. A quantitative representation of recreation resources in a county division.

Standard. Something used by general agreement to determine whether or not the subject is as it should be.[27]

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[26]Ibid.

[27]Webster's New World Dictionary (Cleveland: The World Publishing Company, 1957), p. 1421.

CHAPTER II

A REVIEW OF THE RELATED LITERATURE

The literature reflected the diversity of the research and thinking over the last two decades. Some trends were evident; some were not at all well-defined. Certainly, research models specifically relating to rural settings were not abundant. Since a variety of factors were utilized by studies and planning efforts, the investigator found it necessary to examine those plans in order to identify factors indicative of recreation need and resources. Once identified, with respect to what the experts and research deemed important, the development of indices representing recreation need and resources was accomplished.

In order to identify those factors indicative of recreation need and recreation resources, the literature had to be examined thoroughly. For organizational purposes, the studies and recommendations were reviewed in the following perspectives: traditional recreation planning, visitor data studies, and socioeconomic and demographic variable studies.

Traditional Recreation Planning

Much of the literature indicated that past recreation planning efforts were resource-oriented; that is, the resources were obtained and located when and where space happened to be available.[1] As Gold has noted, the result of such resource allocation has been imbalance:

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[1]Elinor C. Guggenheimer, Planning for Parks and Recreation Needs in Urban Areas (New York: Twayne Publishers, 1969), p. 56.

the majority of open areas have been unavailable to the major concentrations of people.[2] The lands were acquired usually by purchase or gift. As cities began expanding, planners established and followed standards based upon so much space per person to guide them in their acquisition of recreation resources.[3]

Current literature in the fields of recreation, planning, and behavioral science has noted numerous objections to the use of arbitrary standards for planning guidelines. Mounting evidence has suggested that the arbitrary practice of enumerating so many facilities per capita is an inadequate representation of demand or needs.[4] Therefore, the old way of allocating land, facilities, and programs has been recently challenged in light of newer planning concepts and methodologies.[5]

Visitor Data Studies

Among the many planning systems which have been used in recent years were visitor data studies. The Regional Plan prepared by the East Tennessee Development District used an activity occasion instrument on a sampling of interviews to obtain a measure for facility use. This measure, representing demand, was subtracted from a supply measure, which was based on a facility inventory.[6]

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[2]Seymour M. Gold, Urban Recreation Planning (Philadelphia: Lea and Febiger, 1973), p. 33.

[3]George D. Butler, Introduction to Community Recreation (New York: McGraw-Hill Book Company, 1949), p. 149.

[4]Gold, p. 8.

[5]Ibid., p. 7.

[6]East Tennessee Development District, Recreation Supply and Demand (Knoxville, Tennessee: East Tennessee Development District, 1976), pp. 1-11.

Tennessee's Outdoor Recreation Plan for the state parks system analyzed a variety of variables. In addition to several socioeconomic variable studies, the Department of Conservation also examined visitation and activity trends and state origin of visitors.[7] A similar study using visitor attendance to determine participation rates for eight selected activities was designed for the California Public Outdoor Recreation Plan.[8] In another visitation study, Fogg was able to show a direct relationship between the increase in age and the number of activities in which participants were engaged.[9]

Although focusing on the participant and existing recreation resources, these visitation studies demonstrated little in terms of identifying potential resource use nor considering basic differences of the people being served: mainly socioeconomic characteristics. Therefore, the investigator looked to other studies and recommendations for guidance in developing a viable system to assess the recreation needs and resources in a rural setting.

Socioeconomic and Demographic Variable Studies

The need for socioeconomic studies in recreation research was stressed by Guggenheimer who wrote that past recreation planning had

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[7]Tennessee Department of Conservation, Tennessee's Comprehensive Outdoor Recreation Plan (Nashville: Tennessee State Planning Commission, 1966), pp. 12-13.

[8]Michael Chubb, Outdoor Recreation Planning in Michigan By a Systems Analysis Approach - Part III: The Practical Application of "Program RECSYS" and "SYMAP" (Lansing, Michigan: State Resource Planning Program, 1967), p. 24.

[9]George E. Fogg, Park Planning Guidelines (n.p.: National Society for Park Resources, 1975), p. 18.

established no relation to the needs of communities. Consequently, few areas' population density, age variables, or the communities' own preferences had been considered.[10] Neulinger further reinforced the need for recreation planners to utilize socioeconomic factors. He wrote that such variables were so obviously related to most aspects of life in general that researchers should expect that leisure behavior was a function of these variables as well.[11]

Since socioeconomic factors have been highly regarded in research use and in discussions regarding recommendations for future research, it was necessary to review such research models and recommendations. Such a review was required in order to identify which of these socioeconomic factors were most generally accepted as being indicators of recreation need and recreation resources.

Multiple Variable Studies and Recommendations

Sessoms summarized the need for multiple variable planning by writing that socioeconomic and demographic factors such as population density, age, income, proximity to facilities, education, occupation, residence, and mobility have frequently been mentioned as being related to recreation participation.[12] His recommendation of using such factors in multiple variable planning has been widely followed.

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[10]Guggenheimer, p. 56.

[11]John Neulinger, The Psychology of Leisure: Research Approaches to the Study of Leisure (Springfield, Illinois: Charles C. Thomas, 1974), pp. 92-93.

[12]H. Douglas Sessoms, "New Bases for Recreation Planning," Journal of American Institute of Planners, XXX, 1 (February 1964), 29.

In a computer study to determine the areal priority for proposed facilities, the City of Dallas surveyed users concerning their ages and their residential distances from recreation facilities. This information was then combined with population density statistics. Areas were classified into three categories. The high priority areas were those with large populations, a high percentage of school age youth, and farther distances (three miles or more) to travel. At the other end of the spectrum the areas with small populations, low percentages of school age youth, and near facilities were rated low priority areas.[13]

Planners for the City of San Diego developed a recreation need index based on population density and proximity to facilities. The design also was operated on two age levels: one for youth aged 18 years and younger, and one for adults.[14] Another index system used population density, population by age distribution, family income, and a variety of other factors to represent recreation need. The index measures, assigned to the study area by census tracts, enabled researchers to compare such tracts to identify need discrepancies.[15]

One of the most extensive studies concerning the use of socio-economic variables was conducted in 1962 by the Outdoor Recreation Resources Review Commission (ORRRC), an agency created by Congress in

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[13]Louis Hodges and Carlton S. VanDoren, "Synagraphic Mapping as a Tool in Locating and Evaluating the Spatial Distribution of Municipal Recreation Facilities," Journal of Leisure Research, IV, 4 (1972), 341-353.

[14]Joseph J. Bannon, Leisure Resources: Its Comprehensive Planning (Englewood Cliffs, New Jersey: Prentice-Hall, 1976), pp. 225-230.

[15]Virginia Kann White, Measuring Leisure-Time Needs (Cleveland: Welfare Federation of Cleveland, 1955), pp. 9-47.

1958 to conduct summary studies and make recommendations for the future of outdoor recreation.[16] After reviewing 48 independent studies ORRRC identified a number of factors as having influence on recreation participation: income, education, occupation, leisure time, place of residence (relating to proximity to facilities and density), sex, age, race, and life cycle.[17]

In the Knox County, Tennessee Plan for Open Space a priority system for allocating funds was recommended. The assessment system utilized such variables as population density, measures for proximity to recreation facilities, and facility distribution figures. The study also related several components for analysis of resources including facility acreage, population counts, and participation rates and trends.[18]

The City of Maryville, Tennessee determined that proximity and quantity of all types of community facilities were rated higher by respondents than were factors of quality and adequacy of facilities.[19] Participants in the National Facilities Conference outlined several

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[16]H. Douglas Sessoms, "An Analysis of Selected Variables Affecting Outdoor Recreation Patterns," Social Forces, XLII, 1 (October 1963), 112.

[17]Outdoor Recreation Resources Review Commission, Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults. Report No. 20. (Washington: U. S. Government Printing Office, 1962), pp. 10-29.

[18]Knoxville-Knox County Metropolitan Planning Commission, Plan for Recreation and Open Space (Knoxville, Tennessee: Knoxville-Knox County Metropolitan Planning Commission, 1976), pp. 16-27.

[19]Maryville Regional Planning Commission, Neighborhood Analysis: Maryville, Tennessee. Report No. TN-MARE-73-1006. (Maryville, Tennessee: Maryville Regional Planning Commission, 1973), p. 89.

factors planners should consider: population density, the individual community's needs and the location, size, and number of existing facilities.[20]

In devising a planning system utilizing socioeconomic and demographic variables, an Indiana investigator validated several variables which contributed significantly to the development of recreation services. Of the eleven variables found to be significant, the highest validation ratings were recorded for the following variables: proximity of the population to recreation facilities, density and distribution of the population, family income, and the population in terms of age groupings.[21]

A Boston study utilized a comparative system to evaluate recreation need and services for 38 segments in metropolitan Boston. Need was evaluated on the basis of several population characteristics: density, youth totals, and percentage of growth in the last ten years. Additionally, several social characteristics were measured including income, housing, education, child dependency, race and delinquency rates. And to determine the status of services, the study appraised recreation facilities, leadership, program, finances, and use figures.[22]

In a study frequently mentioned by many recreation planners, Edwin J. Staley developed a system which demonstrated comparative priority

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[20]Planning Facilities for Health, Physical Education, and Recreation (Chicago: The Athletic Institute, 1956), p. 2.

[21]Ken Krick, A System Utilizing Demographic and Socioeconomic Data to Assist Recreation Planners (Re.D. thesis, Indiana University, 1975), p. 76.

[22]Profile for Planning: An Approach to Measuring Need for Leisure Time Services in Metropolitan Boston (Boston: Recreation, Informal Education and Group Work Division and Research Division, United Community Services of Metropolitan Boston, 1962), pp. 5-6.

of need for recreation services in Los Angeles. Staley implemented four variables (youth population figures, population density, median family income figures, and juvenile delinquency rates) in his development of a need index for each community under study. Similarly, he developed a resource index for each study community using the following factors: the number of professional staff hours per 1,000 population, acreage of recreation centers per 1,000 population, and the number of recreation centers per 10,000 population. For each component of each index, the raw scores were converted into c-scores. The c-score components representing recreation need were added together to form a need index; likewise, resource factor c-scores were added to represent the resource index. Then, for each study community the need index was subtracted from the resource index. The resulting difference measures were compared to one another and placed in rank order; the greater the difference measure, the greater was the discrepancy between recreation needs and recreation resources being provided.[23]

The literature consistently supported the use of demographic and socioeconomic variable use in developing recreation plans. However, a universally accepted research model was not evident. Further, most recreation research had been conducted in urban areas; consequently, no research models were available for rural settings. As a result, the investigator thought it necessary to review related studies and respected opinions in order to identify those factors thought to be indicative of recreation need and recreation resources for use in a rural setting.

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[23]Edwin J. Staley, "Determining Neighborhood Recreation Priorities: An Instrument," Journal of Leisure Research, I, 1 (1969), 69-73.

Although the use of such factors varied among researchers, several variables were consistently mentioned. Those most frequently referenced as being indicative of recreation need included age groups, population density, family income, and proximity to recreation facilities. Those most frequently mentioned as being indicative of recreation resources included number of recreation facilities, acreage of recreation facilities, and number of recreation staff hours. In the following pages these factors, which have been identified by the experts as being representative of recreation need and recreation resources, were summarized and examined individually.

A Summary of Those Factors Indicative of Recreation Need

Age. Bannon noted that recreation needs vary for age groups.[24] A number of recreation planners and experts have substantiated that concept as noted in the review of multiple variable studies: Guggenheimer,[25] Sessoms,[26] White,[27] ORRRC,[28] and Krick.[29] Additionally, several sources specifically used youth totals as a need factor: the Dallas study,[30] the San Diego study,[31] the Boston study,[32] and Staley.[33] Even though

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[24]Bannon, p. 123.

[25]Guggenheimer, p. 56.

[26]Sessoms, Journal of American Institute of Planners, p. 29.

[27]White, p. 47.

[28]Outdoor Recreation Resources Review Commission, pp. 10-29.

[29]Krick, p. 76.

[30]Hodges and VanDoren, pp. 341-353.

[31]Bannon, pp. 225-230.

[32]Profile for Planning, p. 5.

[33]Staley, p. 71.

a consensus has been established among multiple variable references, other single variable references further supported a youth population age group as a need factor.

In a study conducted by the City College of New York in 1969, the youth group was found to feel a greater "affinity for leisure" than the older group. Also, the younger group felt that they identified more with leisure.[34] And, reflecting on some of the implications of the ORRRC findings, Sessoms discerned two age related patterns. He noted that both the number and types of recreation activities pursued were related to age: the older one became, the more passive became his pursuits.[35]

Traditionally, recreation agencies have placed substantial emphasis on youth programs.[36] Certainly agencies have made it a practice to increase programs during the summer months.[37] It has been believed that youth is a period of rapid growth and development in all phases: a time when new associations become important and when personal independence begins to supersede parental dependence. Further, it has been thought that recreation services make important contributions during this time. Hence, the conclusion has evolved that the greater the youth population, the greater is the need of recreation services.[38]

Population density. This factor was by far the most widely accepted indicator of recreation need among recreation professionals as

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[34]Neulinger, p. 97.

[35]Sessoms, Social Forces, p. 113.

[36]Staley, p. 70.

[37]Guggenheimer, p. 33.

[38]Profile for Planning, p. 13.

has been noted in the multiple variable references: Guggenheimer,[39] Sessoms,[40] White,[41] Krick,[42] the Dallas study,[43] the San Diego study,[44] and many others. Similarly, it has been considered as the most important factor associated with recreation demand by such experts as Gold[45] and Butler.[46]

Staley mentioned that his use of population density as a need factor was based upon the wide acceptance of the idea that greater density per acre requires more recreation services. He also cited that densely populated areas have greater use of recreation facilities due to the inadequacy of play space at home.[47]

So, as has been repeatedly substantiated by a variety of recreation studies and expert opinions, population density has long been recognized as an integral determinant of recreation need.

Family income. Family income was frequently mentioned in the multiple variable studies as an indicator of recreation need.

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[39]Guggenheimer, p. 56.

[40]Sessoms, Journal of American Institute of Planners, p. 29.

[41]White, p. 47.

[42]Krick, p. 76.

[43]Hodges and VanDoren, pp. 341-353.

[44]Bannon, pp. 225-230.

[45]Gold, p. 29.

[46]Butler, p. 155.

[47]Staley, p. 70.

Specifically, Sessoms,[48] White,[49] Krick,[50] ORRRC,[51] the Boston study,[52] and Staley[53] all identified its use as a factor which should be considered by recreation planners. In addition to multiple variable references, family income had also become a recognized need factor on its own merit.

Historically, the recreation profession has had its foundations in the provision of recreation services to the poor. The American recreation movement actually began in response to the needs of the poor in crowded cities. More recently as the advantaged families moved to the suburbs, the recreation resources went with them. The poor were left with insufficient facilities and staff.[54] Concurring opinions have been expressed by Lindsay and Ogle,[55] Carter,[56] and Clawson and Knetsch.[57]

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[48]Sessoms, Journal of American Institute of Planners, p. 29.

[49]White, p. 47.

[50]Krick, p. 76.

[51]Outdoor Recreation Resources Review Commission, pp. 10-29.

[52]Profile for Planning, p. 6.

[53]Staley, p. 71.

[54]Fred R. Harris, "Man Must Laugh," Recreation and Leisure Service for the Disadvantaged: Guidelines to Program Development and Related Readings, eds. John A. Nesbitt, Paul D. Brown, and James F. Murphy (Philadelphia: Lea and Febiger, 1970), p. ix.

[55]John J. Lindsay and Richard A. Ogle, "Socioeconomic Patterns of Outdoor Recreation Use Near Urban Areas," Journal of Leisure Research, IV, 1 (1972), 22.

[56]Genevieve W. Carter, "The Challenge of Research in Today's Society," Recreation Research (Washington: American Association for Health, Physical Education, and Recreation, 1966) p. 5.

[57]Marion Clawson and Jack L. Knetsch, Economics of Outdoor Recreation (Baltimore: Johns Hopkins Press, 1966), p. 151.

In a study conducted in Ohio it was found that higher use was made of local parks and playgrounds by the lower classes than by the middle classes.[58] Neulinger noted that the better educated one is (and thus generally the higher his income), the better equipped he is both professionally and leisurely.[59] Conversely, low income families have been considered less able to provide their own recreation; therefore, they have a greater need for community subsidized recreation services than do high income families. Staley further emphasized the greater need of low income families for public recreation services by observing that such families usually are less mobile than wealthy families.[60] The recognition that low income is highly associated with recreation need has been embraced by Harris,[61] Guggenheimer,[62] Gold,[63] Hatry and Dunn,[64] and Clawson and Knetsch.[65]

Proximity to recreation facilities. How near a facility is to the population has been identified in the multiple variable studies as

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[58]Clyde R. White, "Social Class Differences in the Uses of Leisure," American Journal of Sociology, LXI, (September 1955), 145-150.

[59]Neulinger, p. 97.

[60]Staley, p. 70.

[61]Harris, p. vii.

[62]Guggenheimer, p. 37.

[63]Gold, p. 49.

[64]Harry P. Hatry and Diana K. Dunn, Measuring the Effectiveness of Local Government Services: Recreation (Washington: The Urban Institute, 1971), p. 11.

[65]Clawson and Knetsch, p. 54.

a prime consideration in determining recreation need. Sessoms,[66] the San Diego study,[67] ORRRC,[68] the Maryville Regional Planning Commission,[69] and Krick[70] have all supported this concept. The Dallas study further identified a three mile measure as a specific proximity service radius.[71] Researchers and recreation professionals have also delineated the proximity value as a recreation need component in single variable discussions.

Research has shown that demand on facilities has been determined largely by the ease or difficulty of obtaining access in time and distance.[72] In the planning of a new park, Clawson and Knetsch have written that the location of its potential users are probably critical in estimating the demand for the park.[73]

ORRRC has suggested in both Report Number 20[74] and Report Number 26 that the availability of facilities and thus the opportunity to participate has some influence on recreation participation.[75]

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[66]Sessoms, Journal of American Institute of Planners, p. 29.

[67]Bannon, pp. 225-230.

[68]Outdoor Recreation Resources Review Commission, pp. 10-29.

[69]Maryville Regional Planning Commission, p. 89.

[70]Krick, p. 76.

[71]Hodges and VanDoren, pp. 341-353.

[72]Thomas L. Burton, Experiments in Recreation Research (Totowa, New Jersey: Rowman and Littlefield, 1971), p. 28.

[73]Clawson and Knetsch, p. 59.

[74]Outdoor Recreation Resources Review Commission, p. 8.

[75]Outdoor Recreation Resources Review Commission, Prospective Demand for Outdoor Recreation. Report No. 26. (Washington: U. S. Government Printing Office, 1962), p. 37.

This concept has become known as the opportunity theory.[76] Among many who support the theory, Burton has stated that people living quite a distance from a facility have even been deterred from using the facility. Not only have they encountered inconvenience and travel costs, but also they have been generally less aware that the facility even existed.[77]

A 1971 study conducted in Baltimore recommended that all types of spaces be considered potential recreation area sites because people tend to play in those locations that were most convenient to them, even if those areas were streets.[78]

Hatry and Dunn wrote that geographical accessibility of facilities has become a principal factor in determining the adequacy of a community's recreation opportunities.[79] Many recreation planners have recently been using several research methods relating to distance and travel time to measure demand.[80]

Since neighborhood and community parks have been defined as user-oriented due to the nature of their constant use by all ages at all times of the day, Clawson believed that they must be located near the users.[81]

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[76]John C. Hendee, "Rural-Urban Differences Reflected in Outdoor Recreation Participation," Journal of Leisure Research, I, 4 (1964), 335.

[77]Burton, p. 313.

[78]Sidney N. Brower and Penelope Williamson, "Outdoor Recreation as a Function of the Urban Housing Environment," Environment and Behavior, VI, 1 (March 1974), 336-341.

[79]Hatry and Dunn, p. 25.

[80]Patrick Lavery, "The Demand for Recreation: A Review of Studies," Town Planning Review, XLVI, 2 (April 1975), 197.

[81]Marion Clawson, America's Land and Its Uses (Baltimore: Johns Hopkins Press, 1972), pp. 73-74.

Consequently, most standards have denoted these community park areas as having a service area up to three miles (Knoxville-Knox County Planning Commission,[82] the National Recreation and Park Association,[83] Burton,[84] and others).

As evidenced in both the multiple variable recommendations and as a single element in the literature, the close proximity to recreation facilities has been firmly established as a determinant of recreation need. Specifically, experts have recognized that populations located more than three miles from facilities demonstrate a greater need for recreation services than do populations living within a facility's three mile service area.

A Summary of Those Factors Indicative of Recreation Resources

Number of recreation facilities. In order to determine a plan for the allocation and location of future facilities, recreation planners have long supported a system of itemizing existing facilities. Numerous experts have utilized an accounting of facilities as an indicator of recreation resources: the Dallas study,[85] the Boston study,[86] Chubb,[87]

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[82]Knoxville-Knox County Metropolitan Planning Commission, p. 10.

[83]National Recreation and Park Association, National Park, Recreation and Open Space Standards (Washington: National Recreation and Park Association, 1971), p. 13.

[84]Burton, p. 247.

[85]Hodges and VanDoren, pp. 341-353.

[86]Profile for Planning, p. 6.

[87]Chubb, p. 54.

the Knoxville-Knox County study,[88] the New York Neighborhoods study,[89] Staley,[90] and others.

The Athletic Institute noted that facilities of any kind should be planned with due regard for the existing facilities' potential: that a complete inventory was necessary.[91] In the development of the state's comprehensive plan, the Tennessee Department of Conservation counted facilities to determine resource status.[92] And in several of the preliminary studies for the East Tennessee Development District's Parks, Recreation and Open Space Plan, recreation lands and facilities were inventoried as recreation resources.[93]

It has been demonstrated in both multiple variable studies and respected opinions that the number of recreation facilities an area possesses is a widely accepted factor indicative of the recreation resource status of that area.

Acreage of recreation facilities. The accounting of acreage as a determinant of recreation resources was also used as a principal

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[88]Knoxville-Knox County Metropolitan Planning Commission, p. 27.

[89]Shirley Jenkins, Comparative Recreation Needs and Services in New York Neighborhoods (New York: Community Council of Greater New York, 1963), p. 3.

[90]Staley, p. 71.

[91]Planning Facilities for Health, Physical Education, and Recreation, p. 2.

[92]Tennessee Department of Conservation, p. 13.

[93]East Tennessee Development District, Parks, Recreation and Open Space Plan. Report No. ET-42-76. (Knoxville, Tennessee: East Tennessee Development District, 1976), p. 11.

factor in many multiple variable studies. Among those studies and expert opinions that enumerated acreage were the Knoxville-Knox County study,[94] the National Facilities Conference participants,[95] the Texas State Park Plan,[96] Staley,[97] and others. Jubenville recommended that a system which considered both the needs of the people and acreage standards provided a balanced assessment; systems using either one alone was not adequate.[98]

The East Tennessee Development District totalled acreage of recreation facilities as one determinant of resource status; those figures were then used to compute projected acreage needs for the study areas.[99] In another Tennessee study, the Tennessee Outdoor Recreation Plan, researchers figured acreage of parks, water, equipment, and facilities to represent the supply of recreation resources in a supply-demand assessment.[100]

As has been evidenced in multiple variable studies and in single variable discussions, acreage of recreation facilities was considered by the experts to be a substantial component in the assessment of recreation resources of an area.

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[94]Knoxville-Knox County Metropolitan Planning Commission, p. 27.

[95]Planning Facilities for Health, Physical Education, and Recreation, p. 2.

[96]Chubb, p. 30.

[97]Staley, p. 71.

[98]Alan Jubenville, Outdoor Recreation Planning (Philadelphia: W. B. Saunders Company, 1976), p. 92.

[99]East Tennessee Development District, pp. 2-23.

[100]Tennessee Department of Conservation, p. 13.

Number of recreation staff hours. As mentioned in the Boston study[101] and Staley's instrument,[102] the enumeration of recreation staff hours was considered to be another factor of importance in the assessment of an area's recreation resources. In a study conducted in New York, Jenkins counted staff hours as a measurement tool of recreation services being provided in the neighborhoods.[103]

Recreation resources have been considered by most experts to be provided by a recreation agency either in the form of physical facilities or recreation programs. The programming aspect, though, has been one in which a tangible measurement has been difficult to obtain. Recreation programming has generally been of a changing nature; organized activities have been conducted seasonally and at a variety of locations. For this reason, the tabulation of staff hours has become recognized as a viable measure for program efforts and hence, recreation resources.

Summary

The literature was reviewed from the standpoint of identifying those factors indicative of recreation need and recreation resources. Therefore, an examination of studies, planning efforts, and expert recommendations was undertaken in three major categories: traditional recreation planning, visitor data studies, and socioeconomic and demographic variable studies.

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[101] Profile for Planning, p. 6.

[102] Staley, p. 71.

[103] Jenkins, p. 101.

It was found that most modern recreation planners refuted the traditional resource-oriented planning on the basis of its inability to meet the needs of the people. Similarly, visitor data studies were considered by many experts to not adequately take into account socio-economic differences nor potential resource use, since they were based soley on the participant in attendance.

It was apparent that most modern research and professional opinions favored socioeconomic and demographic variable approaches to recreation research. Specifically, multiple variable approaches were recommended. After reviewing numerous multiple variable studies and planning recommendations, the investigator was able to identify several variables which had been consistently mentioned by the research experts. Those factors most frequently referenced as indicators of recreation need included age groups, population density, family income, and proximity to recreation facilities. Those factors identified as indicators of recreation resources included number of recreation facilities, acreage of recreation facilities, and recreation staff hours.

Further examination of these factors representing recreation need and recreation resources indicated more precise delimitations for some. It was demonstrated that of all age groups, the youth population was considered to be representative of the highest recreation need. And for the proximity factor, it was shown that populations located more than three miles from a recreation facility represented a greater need than populations within a three mile service radius.

Respected recreation planners and professionals have therefore specifically identified several variables considered to be indicative

of recreation need and recreation resources. Recreation need factors, thus identified, included youth population totals, population density, family income and proximity greater than three miles from recreation facilities. Factors identified as being indicative of recreation resources included number of recreation facilities, acreage of recreation facilities, and recreation staff hour totals.

CHAPTER III

METHODS AND PROCEDURES

The objective of the study was to assess the recreation needs and recreation resources of Blount County, Tennessee. The recreation needs and the recreation resources were compared for each county division so that divisions were able to be ranked in order of unmet recreation need. In order to accomplish this objective the three sub-problems had to be addressed:

1. Identifying recreation need factors in a rural setting.
2. Identifying recreation resource factors in a rural setting.
3. Developing a need index and a resource index for determining a priority ranking of the census divisions in order of recreation need.

The recreation need factors have been identified by the experts as youth population totals, population density, family income, and proximity to recreation facilities in excess of three miles. Similarly, factors indicative of recreation resources have been identified as the number of existing recreation facilities, acreage of existing recreation facilities, and the number of paid recreation staff hours.

In the development of indices representing each of those factors for each county division, the investigator found it necessary to determine whether a similar research model had been developed.

Selection of a Research Model

As has been mentioned in the review of literature, no research plan had provided an exact model for use in a rural setting. However, one method had implemented several of the factors identified for use in this study: Edwin J. Staley's study in Los Angeles. Additionally his plan had been frequently mentioned and reviewed by recreation professionals as an accepted research model. Among the many references who cited Staley's research as an established instrument were Murphy, Williams, Niepoth, and Brown[1] and the Journal of Leisure Research,[2] the professional research publication of the National Recreation and Park Association.

But, as mentioned, even Staley's plan was not ideally suited for application in a rural setting. Therefore, in the development of a study design the investigator found it necessary to make several adaptations to Staley's urban research model in order to insure the design's applicability to a predominantly rural county.

Adaptations of Staley's Research Model

Determining Study Area Divisions

Staley's divisions. The research plan, as devised by Staley, divided the City of Los Angeles into 61 "name" communities.[3]

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[1]James F. Murphy, John G. Williams, E. William Niepoth, and Paul D. Brown, Leisure Service Delivery System: A Modern Perspective (Philadelphia: Lea and Febiger, 1973), p. 66.

[2]Edwin J. Staley, "Determining Neighborhood Recreation Priorities: An Instrument," Journal of Leisure Research, I, 1 (1969), 69-74.

[3]Ibid., p. 73.

Although Staley had not specifically identified the method used to divide the city into such communities, he had used Shevsky as a bibliographic citation.[4] Since Shevsky had supported the use of census tracts as the units of analysis in earlier publications,[5] it was believed by the investigator that Staley also had used census tract divisions in his study.

Adaptations. The use of census divisions for comparative studies was also recommended by other recreation researchers including White,[6] Burton,[7] and the Boston study.[8] And since much of the data to be collected was reported by the Bureau of the Census in terms of census divisions, it was decided that county census divisions would be used for the study.

The county census divisions for Blount County included Alcoa, Friendsville, Lanier, Maryville, Townsend, and Wildwood.[9] These county census divisions have been displayed on a map: Figure 1, Appendix A.

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[4]Ibid., p. 74.

[5]Eshref Shevsky and Wendell Bell, Social Area Analysis (Stanford, California: Stanford University Press, 1955), p. 20.

[6]Virginia Kann White, Measuring Leisure-Time Needs (Cleveland: Welfare Federation of Cleveland, 1955), p. 9.

[7]Thomas L. Burton, Experiments in Recreation Research (Totowa, New Jersey: Rowman and Littlefield, 1971), p. 312.

[8]Profile for Planning: An Approach to Measuring Need for Leisure Time Services in Metropolitan Boston (Boston: Recreation, Informal Education and Group Work Division and Research Division, United Community Services of Metropolitan Boston, 1962), p. 7.

[9]Bureau of the Census, 1970 Census of Population and Housing: Census Tracts, Knoxville, Tennessee (Washington: U. S. Government Printing Office, 1972), Inset.

Determining Specific Recreation Need Factors

Staley's factors. In his plan, Staley had used youth population totals for ages five to nineteen years, population density per square mile, median family income, and totals of juvenile delinquency petitions per 1,000 youth as factors representing recreation need.[10]

Adaptations. As has been established, the experts identified youth population totals, population density, family income, and proximity to recreation facilities greater than three miles as factors indicative of recreation need. As a result of the experts' lack of support for Staley's juvenile delinquency factor and their substantial support for the proximity value, the four factors identified by the experts were selected for use in the study.

Staley also had delineated his youth population factor as encompassing ages five to nineteen years. Since the Bureau of the Census reported youth population totals for ages nineteen years and younger,[11] the age range was established to include the larger youth age range. Also, by including all youth rather than just school-age youth, the investigator believed that a more representative youth population factor was achieved.

Consequently, the factors indicative of recreation need have been established as youth population totals for nineteen years and under, population density per square mile, median family income, and proximity to recreation facilities in excess of three miles.

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[10]Staley, p. 71.

[11]Bureau of the Census, pp. 2-3.

Determining Specific Recreation Resource Factors

Staley's factors. Staley had used three factors as measurements of recreation resources: number of recreation centers per 10,000 population, acreage of recreation centers per 1,000 population, and recreation staff hour totals per 1,000 population per year.[12]

Adaptations. The experts had similarly identified those factors as being indicative of recreation resources. However, they had identified broader parameters for the number and acreage factors: number of recreation facilities and acreage of recreation facilities. The inclusion of all major recreation facilities in the number of facilities and facility acreage factors allowed the study to encompass a wider inventory of recreation services. In this way a more complete assessment of existing recreation resources was made possible. Facilities considered by the investigator to be major recreation facilities included recreation centers, school gym centers, parks, swimming pools, tennis courts, and ballfields.

In summary, the factors indicative of recreation resources have been established as the number of major recreation facilities per 10,000 population, acreage of major recreation facilities per 1,000 population, and recreation staff hour totals per 1,000 population per year. Major recreation facilities included recreation centers, school gym centers, parks, swimming pools, tennis courts, and ballfields.

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[12]Staley, p. 71.

Developing Recreation Need and Recreation Resource Indices

Staley's indices. In the development of an index to represent recreation need, Staley had converted each of the raw scores for each need factor into corresponding "c-scores." The c-scores ranged from 0 to 100 in intervals of ten. The 61 c-scores representing median family income, for example, were placed in order to form a c-scale for the median family income factor. Similarly, a c-scale was developed for each of the need factors: a youth population c-scale of 61 c-scores, a population density c-scale of 61 c-scores, and a proximity c-scale of 61 c-scores. Each c-scale displayed the relative positions of each of the 61 community scores to each other. If, for example, a community had been placed on the median family income scale at a score of 60, that community had ranked slightly above the average for the communities under study.

Once converted into such comparable scales, the factor c-scores for each community were added together to represent the recreation need index for that community.[13] Thus, a community with a c-score of 60 for median family income, 40 for youth population totals, 50 for population density, and 50 for the proximity value totalled a need index score of 200. That total of c-scores represented the recreation need index for that community.

In the development of an index for each community representing recreation resources, Staley followed the same procedure. He converted community raw scores into corresponding c-scores to establish a c-scale

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[13] Ibid., pp. 72-73.

for each factor: a c-scale of 61 community c-scores representing number of recreation facilities, a c-scale of 61 c-scores representing acreage of recreation facilities, and a c-scale of 61 c-scores representing staff hour totals. Each community's factor c-scores were totalled to form the recreation resource index for that community.[14] Thus, a recreation need index and a recreation resource index had been developed for each of the 61 communities in Los Angeles.

Although Staley was able to align the 61 raw scores for each factor in relative order to each other, his system was unable to demonstrate proportionate raw score distances. Also, by having been placed on a c-scale in intervals of ten, scores forfeited their individual identities since each was given equal magnitude as other scores in that same interval.

Adaptations. Since each of the factors selected for this study was represented by unrelated raw scores, the investigator thought it necessary to convert such unrelated values to corresponding scales just as Staley had done. Once converted into such comparable scales, the resulting homologous score values were able to be added and subtracted as equally weighted components of the assessment. Hence the investigator developed a similar 100-point scale system for each factor. The method used in this study of converting the raw scores to points on a 100-point scale was different from Staley's method.

In the development of a 100-point scale for each of the recreation need factors, the highest of the six county division scores was assigned the highest scale position possible, 100 points. The lowest county division

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[14] Ibid.

score for each factor was assigned the lowest scale position, 0 points. The middle raw scores for each factor were then placed on the 100-point scale in relation to their distances from the factor's high and low scores.

For example, if the county division raw scores for the youth population factor ranged from 1,165 to 10,685, the lowest score (1,165) was assigned a scale position of 0. The highest score (10,685) was assigned a scale position of 100. The other youth population raw scores for the other county divisions (1,415; 1,555; 2,703; and 5,197) were then placed on the scale relative to their corresponding distances from the raw score extremes. The placement of these middle scores on the scale was accomplished in the following manner.

The raw score range was found by subtracting the low raw score from the high raw score: 10,685 - 1,165 = 9,520. Since raw scores were being placed on a 100-point scale, the raw range was divided by 100 to find the number of raw score points corresponding to each scale point. In this instance, 9,520 raw range points were being converted to 100 scale points; thus 9,520 ÷ 100 = 95.20. Therefore, for the youth population scores, one scale point corresponded to 95.20 raw score points. For convenience, the investigator decided to refer to this number (95.20 in this case), representing the corresponding difference between the scale range and the raw score range, as the conversion factor.

Once established for each set of need factor scores, the conversion factor was used to position the middle raw scores onto the 100-point scales in relation to the raw score extremes. In the continuation of the youth population example, the placement of one of the middle raw

scores, 1,415, was next accomplished. First, the distance had to be found between the score 1,415 and the raw score lower extreme: 1,415 - 1,165 = 250. The score 1,415 was 250 points above the raw score low extreme. Since the raw score low extreme had previously been assigned a scale score of 0, the raw score 1,415 had to be placed on the scale in relation to that 0. The 250 raw score difference, therefore, was divided by the conversion factor: 250 ÷ 95.20 = 3 (rounded to the nearest whole number). Thus, the raw score 1,415 was 250 raw score points from the low raw extreme (1,165) or 3 scale points from the low scale extreme. The raw score 1,415 was assigned the scale position of 3. The other youth population middle raw scores (1,555; 2,703; and 5,197) were similarly figured for placement on the 100-point scale.

In converting the raw scores for the other recreation need factors the procedure was the same as that used in the youth population example. Raw score extremes were, of course, different for each factor since each factor had a different set of scores. Accordingly, the conversion factor for population density, median family income, and the proximity value was also different since its development was based on each need factor's raw score extremes.

The investigator similarly developed a 100-point scale for each of the three recreation resource factors. After all conversions were made, four scales representing the four recreation need factors and three scales representing the three resource factors had been developed.

By using this conversion method each of the county division's raw scores had been placed on appropriate scales relative to its proportionate distance from the low and high scores in the factor group.

Since this system did not use scale intervals of ten as Staley had used, each of the scores maintained their individual identity. The investigator believed this to be of primary importance for use in a rural county since the number of census divisions was few (six) and thus, the number of scores for each need or resource factor was few (six).

To obtain a recreation need index for each county division, the procedure remained the same as Staley's procedure. The homologous scale scores were added together to form the recreation need index for each county division. Therefore, by totalling a division's scale scores for youth population, population density, median family income, and the proximity value, a single index was formed to represent that division's recreation need. A recreation need index was determined for all six county divisions.

Likewise, the converted scale scores of the factors representing recreation resources were totalled for each county division. As with the need index development, a division's scale scores for number of recreation facilities, acreage of recreation facilities, and total staff hours were added to form a single index which represented that division's recreation resources. A recreation resource index was developed for all of the six county divisions.

It should be noted that for two of the need factors, a high raw score actually represented a low recreation need. Therefore, for those two need factors, the raw scores were converted into scale scores in reverse order. For both the median family income and the proximity value, high raw scores actually indicated low recreation need. The raw score conversions to scale scores were simply computed by assigning the

lowest raw scores the highest scale scores of 100. Accordingly, the highest raw scores were assigned the lowest scale score of 0. The middle scores for both of the factors were assigned positions relative to those extremes, as was done for placement of all other factor middle scores.

The adaptations to Staley's plan as an accepted research model for assessing recreation needs and resources were designed to insure the plan's applicability to a rural setting. By utilizing county census divisions as study area units, the factors as determined by the experts as indicators of recreation need and resources, and a more representative system in placing raw scores on comparable scales, the investigator was able to effectively adjust Staley's plan for use in a rural county.

Procedure for Determining Priority Rankings

The development of a recreation need index and a recreation resource index for each county division had addressed a portion of the final sub-problem. The third sub-problem also required determination of a priority ranking of divisions in order of unmet recreation need. In order to determine a priority ranking of divisions, a comparison of recreation need to recreation resources for each division was necessary. Since indices had been developed to represent recreation need and recreation resources for each division, comparison of the two indices was made possible.

Inasmuch as the procedure for developing the two indices for each county division has been thoroughly reviewed as an adaptation to Staley's model, further in-depth discussion was not necessary. The reiteration of the index formation was considered important, however, to establish succeeding procedures.

To develop a recreation need index for each county division, a division's converted scale scores for youth population, population density, median family income, and the proximity value were added. The resulting total represented the recreation need index for that county division. Scale scores were similarly added for the other five county divisions, thereby resulting in six need indices.

Similarly a division's scale scores representing the number of recreation facilities, acreage of recreation facilities, and staff hour totals were added to form that division's recreation resource index. Factor scale scores for the other five county divisions were also totalled, resulting in six resource indices.

Hence, each county division had a recreation need index and a recreation resource index. In order to achieve a comparison of the two, one simply was subtracted from the other. Since the resource index represented what an area had in terms of recreation services, it was logical to subtract the need index from the resource index to find the difference between the two. This difference represented unmet recreation need or the abundance of resources in relation to need. This procedure of subtracting the need index from the resource index was followed for each of the six county divisions. The six resulting numerical differences were placed in order of lowest to highest (negative to positive). The county division with the lowest resulting negative difference was the area with the highest need of future recreation services. Conversely, the division with the highest resulting positive difference was the area having resources which met or surpassed the recreation need for that division. This ordering of differences between recreation resources and recreation

need established a priority ranking of the county divisions for future recreation services.

In summary of the comparison procedure, each division's recreation need index was subtracted from its recreation resource index. The resulting difference represented that portion of recreation need either not met or exceeded by the recreation resources. The numerical differences were placed in ascending order. As a result, the division which had the lowest numerical difference was ranked first; the division with the highest numerical difference was ranked last. This ordering of numerical differences established a ranking of divisions in need priority for future recreation services.

Collecting the Data

Collecting Recreation Need Factor Data

The 1970 Bureau of the Census Report was used to collect the following data for the development of a need index for each county division:

1. Youth population totals for persons 19 years and younger for each of the county census divisions for Blount County, Tennessee.[15]
2. Total population figures for each of the county census divisions for Blount County, Tennessee.[16]

The Bureau of the Census Report was also used to collect figures for the median family income factor.[17] Median family income figures were

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[15]Bureau of the Census, pp. 2-3.

[16]Ibid.

[17]Ibid., pp. 32-33.

reported for the county divisions of Friendsville, Lanier, Townsend, and Wildwood. But for both Alcoa and Maryville divisions, median family income figures were reported for smaller census units, census tracts. Alcoa, having four such tracts comprising the Alcoa county division, therefore had four different figures representing median family income. The situation was similar for Maryville, having eight tracts and therefore eight figures for median family income. To obtain a single figure representing median family income for the Alcoa and the Maryville divisions, the investigator consulted the Blount County Branch of the Tennessee State Planning Office for a computational recommendation. Officials suggested that the median family income figure for each tract be multiplied by the number of reporting families in that tract. The multiplied results for each division were then added. Also, for each division, the total number of families reporting were added. The sum of the multiplied incomes were divided by the total number of families to produce a weighted average of the median family incomes reported for each division's tracts.[18] It should be noted that all computations were rounded to the nearest whole number.

For the collection of data for the fourth recreation need factor, proximity to recreation facilities in excess of three miles, a quite different approach was used. First, a listing of recreation facilities was obtained from the Recreation and Parks Commission.[19] Those major

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[18]Telephone interview with Keith Megginson, Tennessee State Planning Office, Maryville, Tennessee, 24 April 1978.

[19]Interviews with Michael R. Crowson, Director, Recreation and Parks Commission of Maryville-Alcoa-Blount County, Maryville, Tennessee, March 1978.

recreation facilities were plotted on a map of Blount County. Those facilities have previously been identified as recreation centers, school gym centers, parks, swimming pools, tennis courts, and ballfields. Circles having a proportionate three mile radius were then drawn around each of the facilities plotted. Any portion of any county division encompassed by the proximity circles was scored as having proximate access to those facilities. One point was scored for each facility's proximate access. Conversely, divisions located outside any proximity circle scored no points. Thus, divisions encircled wholly or partially by many proximity circles were scored higher than were divisions encircled by fewer proximity circles.

Collecting Recreation Resource Factor Data

Data to develop a resource index for each county division were obtained from the Recreation and Parks Commission of Maryville-Alcoa-Blount County:

1. The number of major recreation facilities operated by the Recreation and Parks Commission in 1977.[20]
2. The acreage of major recreation facilities operated by the Recreation and Parks Commission in 1977.[21]
3. The number of paid recreation staff hours in 1977.[22]

For the number of recreation facilities factor, the Recreation and Parks Commission furnished a listing of major recreation facilities

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[20]Ibid.

[21]Ibid.

[22]Recreation and Parks Commission of Maryville-Alcoa-Blount County, Payroll Records for Pay Periods from January 1 to December 31, 1977.

and locations by county divisions; the investigator plotted those facilities on a map of Blount County. County division boundaries were drawn on the map. The total number of major recreation facilities in each division was then calculated by adding the facilities located within each division's boundaries.

The calculation of acreage of major recreation facilities was similarly totalled for each division. The locations of major facilities were plotted on a Blount County map and division boundaries were drawn. By referencing a list of facility acreage provided by the Recreation and Parks Commission, acreage totals were then added for each county division. In some instances, such as for school gym centers, facilities were smaller than one acre in size. Since an exact size measurement was not available, the investigator assigned those facilities the minimum whole number possible, one acre. County division totals of facility acreage were therefore expressed in whole numbers.

To obtain the number of paid recreation staff hours the investigator was allowed to examine payroll sheets from January 1, 1977 to December 31, 1977. Since work locations had been noted on the payroll sheets, the hours worked at each location were totalled. Those locations were plotted on a map of Blount County and the county division boundaries were drawn on the map. The total number of recreation staff hours worked in each county division were then calculated by adding the staff hours worked in all the locations contained within each division's boundaries.

Since recreation administrative and supervisory personnel performed work for all county divisions and therefore could not be identified with any specific county division, their hours were not calculated.

Other agency personnel omitted from the study included clerical and park maintenance staff. It was believed by the investigator that those personnel did not provide recreation program services.

It should also be noted that for some programs, employees were paid either a percentage of program revenue or a fixed contracted amount. In those cases, only the total wages had been recorded on the payroll sheets. To determine the number of hours worked by those employees, the investigator consulted the Director of the Recreation and Parks Commission of Maryville-Alcoa-Blount County. The Director recommended using the following estimated hourly rates or hourly schedules for calculating hours worked for those employees:

1. Biddy League Officials -- $4 per hour.
2. Community Night Supervisors -- $5 per hour.
3. Dance and Baton Instructors -- $5 per hour.
4. Basketball Gym Supervisors -- 4 hours per night worked.
5. Midget/Pee Wee Football Gate Supervisors -- 3 hours per night worked.
6. Officials for other sports programs -- 1 hour per game worked.
7. Swimming Pool Supervisors/Managers -- 40 hours per week worked.[23]

To calculate hours worked for those positions in which the hourly rates were listed, the rates were divided into the total wages paid. To calculate hours worked for those positions in which the hourly schedules

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[23]Interview with Michael R. Crowson, Director, Recreation and Parks Commission of Maryville-Alcoa-Blount County, Maryville, Tennessee, Feburary 1978.

were listed, the hours were simply totalled for each period of time worked.

In summary, the data collection process had involved varied sources. Census statistics were referenced for the collection of three of the recreation need factors: youth population totals, total population figures, and median family income. The Recreation and Parks Commission provided the information for the fourth need factor, the proximity value. Their facility location list was used to plot facilities; three mile measures were drawn to determine each division's proximity need.

For the data collection for the recreation resource factors, the Recreation and Parks Commission furnished base information and figures for all three factors. The number and acreage of major recreation facilities and the recreation staff hour totals were calculated for each county division after facilities had been plotted on a Blount County map. Agency records were referenced for each facility so that facility, acreage, and staff hour totals were able to be added for each county division.

Tabulating the Data

Tabulating Recreation Need Factor Data

Once collected, the data for each of the recreation need factors were tabulated for each county division. Since the youth population figures were reported by county census divisions in totals, no further tabulation was required. Similarly, further computations were not necessary for the median family income factor. As was explained in the data collection process, data for the three mile proximity factor were totalled

for each of the county divisions. Tabulation for this factor was based on the awarding of points at one each for the number of facility proximate circles located within a division's boundaries.

The population density factor had also required an additional computation in the tabulation process. Since the factor had been specifically identified as population density per square mile, the population totals for each division were divided by the number of square miles contained within each division. The investigator obtained a list from the Blount County Branch of the Tennessee State Planning Office denoting the number of square miles in each county census division.[24] For each county division, the population total (as collected from the Bureau of the Census) was divided by the number of square miles contained within that division to obtain a population density figure.

Once collected and tabulated, the data for each of the factors indicative of recreation need were converted into comparable scale scores. The scale scores were added for each county division, yielding a recreation need index for each division. That procedure has been reviewed in a preceeding section of this chapter.

Tabulating Recreation Resource Factor Data

The data for each of the recreation resource factors were tabulated for each county division. For the number of recreation facilities factor, facility locations were plotted on a map of Blount County. After county division boundaries were drawn on the map, the investigator counted

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[24]Telephone interview with Keith Megginson, Tennessee State Planning Office, Maryville, Tennessee, 3 May 1978.

the number of facilities located within each division's boundaries to obtain the total for each county division. Since the number of facilities factor had been specifically identified as the total number of facilities per 10,000 population, the total was divided by each division's population (per 10,000). Therefore, the total number of facilities for each county division was divided by its own population (per 10,000). County division population figures were available from the Bureau of the Census. Those division figures were reduced to the per 10,000 unit by dividing each division's population by 10,000.

Tabulation of the acreage factor was accomplished in the same manner: facilities were plotted on a county map and division boundaries were drawn on the map. A list provided by the Recreation and Parks Commission was consulted to obtain acreage figures for each of the facilities plotted. Acreage of facilities contained within each division's boundaries were totalled for each county division. Since the acreage factor had been specifically identified as the total number of acreage per 1,000 population, the acreage total was divided by each division's population (per 1,000). As mentioned, the county division population figures were available from the census statistics. Those county division figures were reduced to the per 1,000 unit by dividing each division's population by 1,000.

Tabulation of the third resource factor, number of recreation staff hours, also followed the same procedure as for the other two factors. Locations at which hours were worked were plotted on a map of Blount County; county division boundaries were drawn. Staff hours worked at those locations contained within each division's boundaries

were totalled for each county division. Since the staff hours factor had been precisely identified as the number of recreation staff hours per 1,000 population, the staff hour total was divided by each division's population (per 1,000). Thus, the staff hour total for each county division was divided by its own population (per 1,000).

As for the need factors, the recreation resource factors were converted into comparable scale scores. The scale scores were totalled for each county division, producing a recreation resource index for each division. As reviewed in detail in a preceeding section of this chapter, the two indices were then compared for each county division. The need index was subtracted from the resource index for each division. The resulting differences were placed in order of need for future recreation services.

Summary

To address the third sub-problem the investigator consulted the design of an established research model, Edwin J. Staley's study in Los Angeles. It was decided to use the Staley research as a guideline, but only after adaptations were made to insure the study's applicability for use in a rural county.

The adaptations to Staley's plan included the use of county census divisions as study area units and the use of those factors determined by the experts to be indicators of recreation need and recreation resources. The factors indicative of recreation need were youth population totals for nineteen years and under, population density per square mile, median family income, and proximity to recreation facilities in excess of three miles. The factors indicative of recreation resources

were established as the number of major recreation facilities per 10,000 population, acreage of major recreation facilities per 1,000 population, and recreation staff hour totals per 1,000 population per year.

Another adaptation to Staley's research model was the method used to convert factor raw scores into equitable scale scores. Once converted, the recreation need scale scores for each county division were added to form a recreation need index. Similarly, the scale scores representing recreation resources were added for each county division to form the recreation resource index. Thus, six such need indices and six resource indices had been developed, one of each for every county division.

The comparison of indices was accomplished by subtracting the recreation need index from the recreation resource index for each county division. The six resulting differences were placed in order from low to high, indicative of a resulting difference of high recreation need to low recreation need. This ordering of differences established the priority ranking of county divisions in need of future recreation services.

Much of the data for the recreation need factors were provided by census statistics: youth population totals, population totals, and median family income figures. Data for the fourth recreation need factor, the proximity factor, were collected by plotting major recreation facilities on a Blount County map. Circles, drawn with a proportionate three mile radius, represented proximate access to the population served by the facility. Each county division was scored for every portion of a circle drawn within its boundaries. The total number of circles were tabulated for each county division to represent the proximity factor.

Data for all the recreation resource factors were obtained from the Recreation and Parks Commission: the number and acreage of major recreation facilities and the number of recreation staff hours. For all three factors, facilities were plotted on a map of Blount County and division boundaries were drawn.

In the achievement of the objective to assess the recreation needs and resources of Blount County, Tennessee, the investigator had identified three sub-problems. The identification of those factors indicative of recreation need in a rural setting was determined by the recreation professionals and experts. Similarly the second sub-problem, the identification of recreation resource factors in a rural setting, was resolved. The third sub-problem required that indices representing recreation need and recreation resources be developed. Also, a priority ranking of county divisions had to be determined. The development of the indices has been demonstrated. Need indices were subtracted from resource indices and their numerical differences were placed in order. The determination of the priority ranking of recreation need by county divisions had completed the resolution of the final sub-problem.

CHAPTER IV

RESULTS OF THE STUDY

In order to determine a priority ranking of county divisions in need of future recreation services, several preliminary procedures were required: scale score development, need and resource indices development, and comparison of the indices. Each of these procedures and their results have been presented in the following pages.

Results of Scale Score Development

Recreation Need Factors

Youth population factor. The youth population figures for ages nineteen years and under are displayed in Table 2.

TABLE 2

YOUTH POPULATION TOTALS BY COUNTY DIVISION

County Division	Youth, 19 Years and Under
Maryville	10,685
Alcoa	5,197
Friendsville	2,703
Lanier	1,555
Townsend	1,415
Wildwood	1,165

Source: Bureau of the Census, 1970 Census of Population and Housing: Census Tracts, Knoxville, Tennessee (Washington: U. S. Government Printing Office, 1972), pp. 2-3.

In the development of comparable scale scores, the high and low raw scores were assigned the high and low extreme scale positions; thus, Maryville was assigned a scale score of 100 and Wildwood was assigned a scale score of 0. The middle scores (Alcoa, Friendsville, Lanier, and Townsend) were then placed on the scale relative to their corresponding distances from the extreme scores. The conversion of these middle scores to scale scores is demonstrated in Table A-1, Appendix B. Listed in Table 3 are the results of all conversions for the youth population factor.

TABLE 3

YOUTH POPULATION SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Maryville	100
Alcoa	42
Friendsville	16
Lanier	4
Townsend	3
Wildwood	0

Population density factor. The population figures for each county division are shown in Table 4. Since the population factor had been identified as density per square mile, each of the population totals was divided by the number of square miles contained within the county division.

TABLE 4

POPULATION DENSITY BY COUNTY DIVISION

County Division	Total Population		Square Miles		Population Density
Maryville	30,550	÷	66.8	=	457
Alcoa	14,469	÷	62.0	=	233
Friendsville	7,301	÷	89.2	=	82
Wildwood	3,344	÷	51.1	=	65
Lanier	4,229	÷	131.2	=	32
Townsend	3,851	÷	183.7	=	21

Source: Bureau of the Census, 1970 Census of Population and Housing: Census Tracts, Knoxville, Tennessee (Washington: U. S. Government Printing Office, 1972), pp. 2-3.

The conversion of the population density raw scores to scale scores was accomplished in the same manner as the method used for the youth population factor. The conversions are demonstrated in Table A-2, Appendix B. The results of these conversions are displayed in Table 5.

TABLE 5

POPULATION DENSITY SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Maryville	100
Alcoa	49
Friendsville	14
Wildwood	10
Lanier	3
Townsend	0

Median family income factor. The Bureau of the Census was also referenced for the median family income factor. As was mentioned, a weighted average computation was necessary for both the Alcoa and Maryville divisions. Those averages are computed in Tables A-3 and A-4, Appendix B. The median family income figures are displayed in Table 6. Since a low family income actually represents a higher recreation need than does a high income, the data are recorded in ascending order.

TABLE 6

MEDIAN FAMILY INCOME FIGURES BY COUNTY DIVISION

County Division	Median Family Income
Townsend	$6,339
Lanier	$6,443
Wildwood	$7,173
Friendsville	$7,544
Maryville	$8,374
Alcoa	$8,412

Source: Bureau of the Census, 1970 Census of Population and Housing: Census Tracts, Knoxville, Tennessee (Washington: U.S. Government Printing Office, 1972), pp. 32-33.

The conversion of the median family income scores to scale scores was accomplished as for the other need factors. The conversions are depicted in Table A-5, Appendix B. The conversion results are displayed in Table 7.

TABLE 7

MEDIAN FAMILY INCOME SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Townsend	100
Lanier	95
Wildwood	60
Friendsville	42
Maryville	2
Alcoa	0

Proximity to recreation facilities factor. In tabulating the proximity factor for each county division, the investigator plotted all major recreation facilities on a map of Blount County. Circles having a proportionate three mile radius were drawn around each of the facilities. Maps for each county division are displayed in Figures 2 through 7, Appendix B. Since some divisions had numerous proximity circles, the investigator presented those division maps on multiple figures: Alcoa is presented on three figures, Friendsville is presented on two figures, and Maryville is presented on three figures.

For each county division, points were tabulated (at one each) for each circle encompassing any portion of a division. In some instances a facility represented more than one kind of major recreation facility. A park, for example, oftentimes included a tennis court and a ballfield. In such instances, a point was totalled for each major recreation facility, regardless of the number contained at one location. The point totals for county divisions are displayed in Tables A-6 through A-11, Appendix B. The facility proximity totals are summarized in Table 8; as with the

median family income factor, the data are recorded in ascending order (from high recreation need to low recreation need).

TABLE 8

PROXIMITY POINT TOTALS BY COUNTY DIVISION

County Division	Facility Proximity Totals
Townsend	5
Wildwood	8
Lanier	13
Friendsville	26
Alcoa	49
Maryville	53

The conversion of the proximity factor scores to scale scores was accomplished by the same method as for the other need factors. The conversions are displayed in Table A-12, Appendix B. Results of the conversions are listed in Table 9.

TABLE 9

PROXIMITY SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Townsend	100
Wildwood	94
Lanier	83
Friendsville	56
Alcoa	8
Maryville	0

Recreation Resource Factors

Number of recreation facilities factor. The major recreation facilities were plotted on a map of Blount County, shown in Figure 8, Appendix C. The numbers of major recreation facilities were totalled for each county division. The results are displayed in Table A-13, Appendix C. A summary of those results are shown in Table 10. Since the factor had been identified as the number of major recreation facilities per 10,000 population, each of the facility totals was divided by its corresponding population (per 10,000).

TABLE 10

NUMBER OF MAJOR RECREATION FACILITIES
PER 10,000 POPULATION BY COUNTY DIVISION

County Division	No. of Facilities		Population Per 10,000		No. of Facilities Per 10,000 Population
Maryville	35	÷	3.0550	=	11
Alcoa	15	÷	1.4469	=	10
Lanier	2	÷	.4229	=	5
Townsend	2	÷	.3851	=	5
Friendsville	3	÷	.7301	=	4
Wildwood	1	÷	.3344	=	3

The conversion of the raw scores to scale scores is demonstrated in Table A-14, Appendix C. Results of the conversions are displayed in Table 11.

TABLE 11

NUMBER OF RECREATION FACILITIES SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Maryville	100
Alcoa	88
Lanier	25
Townsend	25
Friendsville	13
Wildwood	0

Acreage of recreation facilities factor. To determine facility acreage totals for each county division, the investigator referred to the map of facility locations: Figure 8, Appendix C. The acreage were added for each county division; the results are displayed in Table A-15, Appendix C. A summary of those results are shown in Table 12.

TABLE 12

FACILITY ACREAGE PER 1,000 POPULATION BY COUNTY DIVISION

County Division	Facility Acreage Totals		Population Per 1,000		Facility Acreage Per 1,000 Population
Alcoa	95	÷	14.469	=	6.57
Maryville	104	÷	30.550	=	3.40
Friendsville	22	÷	7.301	=	3.01
Townsend	2	÷	3.851	=	.52
Lanier	2	÷	4.229	=	.47
Wildwood	1	÷	3.334	=	.30

Since the factor had been identified as the total number of acreage per 1,000 population, each of the acreage totals was divided by its corresponding population (per 1,000). The results have been calculated to the nearest one-hundredth in order to achieve distinguishable differences among the figures.

The conversion of raw scores to scale scores is demonstrated in Table A-16, Appendix C. Results of the conversions are displayed in Table 13.

TABLE 13

FACILITY ACREAGE SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Alcoa	100
Maryville	52
Friendsville	45
Townsend	4
Lanier	3
Wildwood	0

Number of recreation staff hours factor. Payroll records are summarized by programs and locations in Table A-17, Appendix C. Placement of facility locations within county divisions was accomplished by referring to the maps of facility locations: Figure 8, Appendix C. Staff hour totals were added for each county division; a summary of those results are shown in Table 14.

TABLE 14

NUMBER OF RECREATION STAFF HOURS PER 1,000 POPULATION
BY COUNTY DIVISION

County Division	No. of Hours		Population Per 1,000		No. of Staff Hours Per 1,000 Population
Alcoa	20,404	÷	14.469	=	1,410
Maryville	27,695	÷	30.550	=	907
Friendsville	1,499	÷	7.301	=	205
Wildwood	678	÷	3.334	=	203
Lanier	645	÷	4.229	=	153
Townsend	518	÷	3.851	=	135

Since the factor had been identified as the number of recreation staff hours per 1,000 population, each of the division totals was divided by its corresponding population (per 1,000).

The conversion of raw scores to scale scores is figured in Table A-18, Appendix C. The conversion results are shown in Table 15.

TABLE 15

NUMBER OF STAFF HOURS SCALE SCORES BY COUNTY DIVISION

County Division	Scale Score
Alcoa	100
Maryville	61
Friendsville	5
Wildwood	5
Lanier	1
Townsend	0

Results of Need and Resource Indices Development

Recreation Need Index

In the formation of a recreation need index for each county division, the scale scores for each of the four need factors were added. The need factor scale scores and the resulting index for each county division are shown in Table 16.

TABLE 16

FORMATION OF RECREATION NEED INDICES:
ADDITION OF NEED FACTORS' SCALE SCORES

County Division	Youth Population Factor	Population Density Factor	Family Income Factor	Three-Mile Proximity Factor	(Total) Recreation Need Index
Townsend	3	0	100	100	203
Maryville	100	100	2	0	202
Lanier	4	3	95	83	185
Wildwood	0	10	60	94	164
Friendsville	16	14	42	56	128
Alcoa	42	49	0	8	99

Recreation Resource Index

The recreation resource index for each county division was similarly formed. The resource factor scale scores and the resulting index for each county division are displayed in Table 17.

TABLE 17

FORMATION OF RECREATION RESOURCE INDICES:
ADDITION OF RESOURCE FACTORS' SCALE SCORES

County Division	Number of Facilities Factor	Acreage of Facilities Factor	Number of Staff Hours Factor	(Total) Resource Index
Alcoa	88	100	100	288
Maryville	100	52	61	213
Friendsville	13	45	5	63
Townsend	25	4	0	29
Lanier	25	3	1	29
Wildwood	0	0	5	5

Results of the Comparison and Ranking Procedure

In order to compare each county division's recreation need index to the recreation resource index, one was subtracted from the other. Since a resource index represented what a division had in terms of recreation services, it was logical to subtract the need index from the resource index. The comparison of indices for each county division is shown in Table 18. The divisions are placed in numerical ascending order as regards the difference between the two indices.

TABLE 18

COMPARISON OF RESOURCE INDICES TO NEED INDICES BY COUNTY DIVISION

County Division	Recreation Resource Index		Recreation Need Index		Difference	Rank Priority
Townsend	29	-	203	=	-174	1
Wildwood	5	-	164	=	-159	2
Lanier	29	-	185	=	-156	3
Friendsville	63	-	128	=	-65	4
Maryville	213	-	202	=	11	5
Alcoa	288	-	99	=	189	6

The differences indicated a priority ranking of county divisions in need of future recreation services. Since Townsend had the greatest negative numerical difference, it was ranked first. The prioritized list also included Wildwood, Lanier, Friendsville, Maryville, and Alcoa.

Summary

After collecting and tabulating the raw data for each of the four recreation need factors and the three recreation resource factors, the raw scores were converted into scale scores. A recreation need index was then developed for each county division by adding the division's scale scores representing the need factors. Among the county divisions, Townsend was found to have the highest recreation need index, 203. The other divisions were determined to have the following recreation need indices: Maryville, 202; Lanier, 185; Wildwood, 164; Friendsville, 128; and Alcoa, 99.

In the development of a recreation resource index for each county division, Alcoa was found to have the highest index with a combined scale score of 288. The other divisions were determined to have the following recreation resource indices: Maryville, 213; Friendsville, 63; Townsend, 29; Lanier, 29; and Wildwood, 5.

Each recreation need index was then subtracted from each division's corresponding resource index. The numerical differences were placed in ascending order, denoting need of future recreation services. The order also had established a priority ranking of county divisions for such services. The results identified Townsend as the county division having the greatest negative discrepancy between recreation resources and recreation need. Therefore, with a comparative difference score of -174, Townsend placed first as the division having the highest priority of need for future recreation services. Wildwood was ranked second with a difference score of -159. Lanier, with a resulting difference of -156, ranked third; Friendsville ranked fourth with a difference of -65; and Maryville ranked fifth with a difference score of 11. Only Alcoa's difference score of 189 had indicated the abundance of recreation resources in relation to the existing recreation need.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The objective of the study was to assess the recreation needs and resources of the county divisions of Blount County, Tennessee. The assessment was designed to determine to what extent the needs were or were not met by the existing resources. In order to make this determination, a comparison of the needs and resources was necessary. To accommodate a comparison, several sub-problems needed to be addressed:

1. Identifying those factors which were indicative of recreation need in a rural setting.
2. Identifying those factors which were indicative of recreation resources in a rural setting.
3. Developing a need index and a resource index for determining a priority ranking of county divisions in order of need for future recreation services.

Numerous professional experts and studies were cited to delineate the recreation need and recreation resource factors. Further specification of the factors was established by the guidance of a widely accepted research model developed by Edwin J. Staley. The factors that were identified as being indicative of recreation need included youth population totals for nineteen years and under, population density per square mile, median family income, and proximity to recreation facilities in excess of three miles. The factors indicative of recreation resources

were identified as the number of major recreation facilities per 10,000 population, acreage of major recreation facilities per 1,000 population, and paid recreation staff hour totals per 1,000 population per year. The data were collected for each of the county divisions.

Most of the data for the recreation need factors were available from the Bureau of the Census: youth population totals, population totals, and median family income figures. Data for the fourth need factor, the proximity value, were obtained by plotting the major recreation facilities on a Blount County map. A circle with a proportionate three mile radius was drawn around each facility. Points were then tabulated for each county division for each circle contained within a division's boundaries.

Data for the three resource factors were obtained from the Recreation and Parks Commission of Maryville-Alcoa-Blount County: the number of major recreation facilities, acreage of major recreation facilities, and the number of recreation staff hours worked in 1977.

Since the data for each of the need and resource factors were quite diverse, it was necessary to convert the raw data into comparable 100-point scale scores. The homologous scale scores were then able to be added as equitable components to form a need index and a resource index for each county division. The conversion of raw scores to scale scores was achieved by assigning the highest raw score for each factor the highest scale position, 100 points. Conversely, the lowest raw score was assigned the lowest scale position, 0 points. The middle scores of that factor were then placed on the scale in relation to their distances from the high and low extremes. The placement of these

middle scores involved determining a conversion factor for each set of factor scores, finding the raw score range for each set of factor scores, and dividing the raw range by the conversion factor.

Once the conversions were made, the need factor scale scores were added for each county division to form a recreation need index. It was determined that Townsend had the highest recreation need index of 203 after totalling the four need scale scores: 3 (youth population), 0 (population density), 100 (median family income), and 100 (proximity value). The need indices for the other county divisions were determined to be 202 for Maryville, 185 for Lanier, 164 for Wildwood, 128 for Friendsville, and 99 for Alcoa.

Similarly, resource factor scale scores were added for each county division to form a recreation resource index. It was determined that Alcoa had the highest resource index with a 288 after totalling the three resource scale scores: 88 (number of facilities), 100 (acreage of facilities), and 100 (number of staff hours). The resource indices for the other county divisions were determined to be 213 for Maryville, 63 for Friendsville, 29 for Townsend, 29 for Lanier, and 5 for Wildwood.

The development of a need index and a resource index for each county division was necessary to resolve the third sub-problem. Since indices were able to be compared by subtraction of one from the other, their use enabled the investigator to rank the divisions in order of need for future recreation services. The results of the comparison procedure had placed Townsend first in need priority with a -174 difference between the resource index and the need index. The rankings for the other county divisions were determined to be second for Wildwood,

third for Lanier, fourth for Friendsville, fifth for Maryville, and sixth for Alcoa. This procedure had established the priority ranking of county divisions; hence, the third sub-problem had been resolved.

Conclusions

Although the comparison procedure of need and resource indices for each county division produced the most prominent results, the development of the resource indices in particular was notable. Examination of the factor scale scores indicates a variety of resource discrepancies which exist:

1. Maryville and Alcoa have an exceptionally higher number of recreation facilities per capita than does Wildwood.
2. Alcoa has an inordinate number of facility acreage per capita than does Wildwood.
3. Alcoa is programmed exceedingly more per capita than are other county divisions including Townsend, Lanier, Wildwood, and Friendsville.

The comparison of need and resource indices for each of the county divisions had enabled the investigator to rank the divisions in order of need for future recreation services. It is apparent that Townsend, ranked first with a -174 difference, is in far greater need for future recreation services than is Alcoa, ranked sixth with a 189 comparison difference. Wildwood and Lanier should also be considered divisions of high priority for future recreation efforts, as they both ranked closely behind Townsend with comparison deficiencies of -159 and -156 respectively. Only the fourth and fifth ranked divisions,

Friendsville and Maryville, are balanced relative to recreation need and existing recreation resources.

It should also be noted that the extreme comparison differences possible are -400 (representing the highest possible need index and the lowest possible resource index) and 300 (representing the highest resource index and the lowest need index possible). Considering the extremes possible, the Blount County extremes of -174 (Townsend) and 189 (Alcoa) are not inordinate with respect to the status of recreation need and recreation resources.

Finally, since the research design was able to successfully assess the recreation need and resources of Blount County, the methodology has been established as an acceptable model for use in a rural setting.

Recommendations

Although the Recreation and Parks Commission cannot alter the position of most of the need factors, it can positively impact the proximity value to achieve a more equitable level of recreation services for the entire service area. Specifically, the Recreation and Parks Commission can effect changes in the status of need factors in the following manner:

1. Increase the number of major recreation facilities within a three mile measure of Townsend, Wildwood, and Lanier.
2. Reduce the number of major recreation facilities within a three mile measure of Maryville and Alcoa.

It should be noted that such recommendations do not necessarily require

construction or acquisition of property or facilities. Rather, a simple reassignment of school gym center use, for example, could achieve the more balanced level of services desired.

The Recreation and Parks Commission is also able to influence the status of the recreation resource factors in the following manner:

1. Increase the number of major recreation facilities within the boundaries of Wildwood and Friendsville.
2. Decrease the number of major recreation facilities within the boundaries of Maryville and Alcoa.
3. Increase the acreage of major recreation facilities within the boundaries of Wildwood, Lanier, and Townsend.
4. Decrease the acreage of major recreation facilities within the boundaries of Alcoa.
5. Increase the recreation programming effort in Townsend, Lanier, Friendsville, and Wildwood.
6. Decrease the recreation programming effort in Alcoa.

As previously mentioned these recommendations can be achieved by obtaining use of facilities owned by other community agencies. The addition or deletion of a recreation facility will also increase or decrease the acreage and staff hour factors to some degree. Therefore, it should be noted that the recommendations appear to be more extensive than they actually are.

The investigator has also assumed that the financial support for such facility and program operation will remain much the same as has existed in recent years. For that reason, the recommendations suggest an increase in one division and a decrease in another to insure a balanced

net effect. The investigator realizes the difficulty involved when a popular, established program or facility operation is discontinued in any service area. Therefore, should expanded financial support be available, the most advantageous action would be to increase services in those designated county divisions to adequately effect a balance of recreation resources throughout the county.

Accomplishing the assessment, particularly establishing a priority ranking of the county divisions, has provided the Recreation and Parks Commission with information relevant to the recreation needs of the people. The information can be used to assist the Recreation and Parks Commission in decision-making for future program and facility development. Therefore, it is specifically recommended that future development be directed toward those county divisions found to be high priority for unmet recreation need: Townsend, Wildwood, and Lanier. This action is necessary in order to insure provision of an equitable level of recreation services to all segments of the population of Blount County, Tennessee.

Since many of the recreation need and resource factors involve data which do change occasionally (population and age totals, for example), it is finally recommended that the assessment be conducted periodically. Since most census statistics are made available every five years, it is specifically recommended that such an updating process be conducted every five years. In this way the system will be able to provide the Recreation and Parks Commission of Maryville-Alcoa-Blount County with current priority rankings of county divisions in need of future recreation services.

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APPENDIXES

APPENDIX A

COUNTY CENSUS DIVISIONS



Figure 1. County Census Divisions, Blount County, Tennessee.

APPENDIX B

RECREATION NEED FACTOR DEVELOPMENT MATERIALS

TABLE A-1

CONVERSION TO SCALE SCORES[a]:
YOUTH POPULATION FACTOR

County Division	Raw Score	Scale Score
Maryville	10,685	100 (assigned)
Alcoa	5,197	42 (converted)[b]
Friendsville	2,703	16 (converted)[c]
Lanier	1,555	4 (converted)[d]
Townsend	1,415	3 (converted)[e]
Wildwood	1,165	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (10,685 - 1,165) ÷ 100
= 95.20

[b]Alcoa scale score = range difference ÷ conversion factor
= (5,197 - 1,165) ÷ 95.20
= 42

[c]Friendsville scale score = range difference ÷ conversion factor
= (2,703 - 1,165) ÷ 95.20
= 16

[d]Lanier scale score = range difference ÷ conversion factor
= (1,555 - 1,165) ÷ 95.20
= 4

[e]Townsend scale score = range difference ÷ conversion factor
= (1,415 - 1,165) ÷ 95.20
= 3

TABLE A-2

CONVERSION TO SCALE SCORES[a]:
POPULATION DENSITY FACTOR

County Division	Raw Score	Scale Score
Maryville	457	100 (assigned)
Alcoa	233	49 (converted)[b]
Friendsville	82	14 (converted)[c]
Wildwood	65	10 (converted)[d]
Lanier	32	3 (converted)[e]
Townsend	21	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (457 - 21) ÷ 100
= 4.36

[b]Alcoa scale score = range difference ÷ conversion factor
= (233 - 21) ÷ 4.36
= 49

[c]Friendsville scale score = range difference ÷ conversion factor
= (82 - 21) ÷ 4.36
= 14

[d]Wildwood scale score = range difference ÷ conversion factor
= (65 - 21) ÷ 4.36
= 10

[e]Lanier scale score = range difference ÷ conversion factor
= (32 - 21) ÷ 4.36
= 3

TABLE A-3

WEIGHTED AVERAGE COMPUTATIONS[a]:
MEDIAN FAMILY INCOME FOR ALCOA

Census Tract	Median Family Income		No. of Families Reporting		Total Incomes Reported
101	$7,224	x	1,076	=	$ 7,773,024
102	$9,769	x	1,060	=	$10,355,140
103	$8,731	x	1,188	=	$10,372,428
104	$7,649	x	708	=	$ 5,415,492
Totals			4,032		$33,916,084

[a]Median family income = total incomes ÷ number of families
= $33,916,084 ÷ 4,032
= $8,412

TABLE A-4

WEIGHTED AVERAGE COMPUTATIONS[a]:
MEDIAN FAMILY INCOME FOR MARYVILLE

Census Tract	Median Family Income		No. of Families Reporting		Total Incomes Reported
105	$ 6,315	x	1,044	=	$ 6,592,860
106	$ 9,826	x	1,147	=	$11,270,422
107	$ 8,679	x	866	=	$ 7,516,014
108	$ 6,931	x	1,065	=	$ 7,381,515
109	$ 8,996	x	1,263	=	$11,361,948
110	$ 7,611	x	1,361	=	$10,358,571
111	$10,372	x	1,203	=	$12,477,516
112	$ 7,807	x	693	=	$ 5,410,251
Totals			8,642		$72,369,097

[a]Median family income = total incomes ÷ number of families
= $72,369,097 ÷ 8,642
= $8,374

TABLE A-5

CONVERSION TO SCALE SCORES[a]:
MEDIAN FAMILY INCOME FACTOR

County Division	Raw Score	Scale Score
Townsend	$6,339	100 (assigned)
Lanier	$6,443	95 (converted)[b]
Wildwood	$7,173	60 (converted)[c]
Friendsville	$7,544	42 (converted)[d]
Maryville	$8,374	2 (converted)[e]
Alcoa	$8,412	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (8,412 - 6,339) ÷ 100
= 20.73

[b]Lanier scale score = range difference ÷ conversion factor
= (8,412 - 6,443) ÷ 20.73
= 95

[c]Wildwood scale score = range difference ÷ conversion factor
= (8,412 - 7,173) ÷ 20.73
= 60

[d]Friendsville scale score = range difference ÷ conversion factor
= (8,412 - 7,544) ÷ 20.73
= 42

[e]Maryville scale score = range difference ÷ conversion factor
= (8,412 - 8,374) ÷ 20.73
= 2

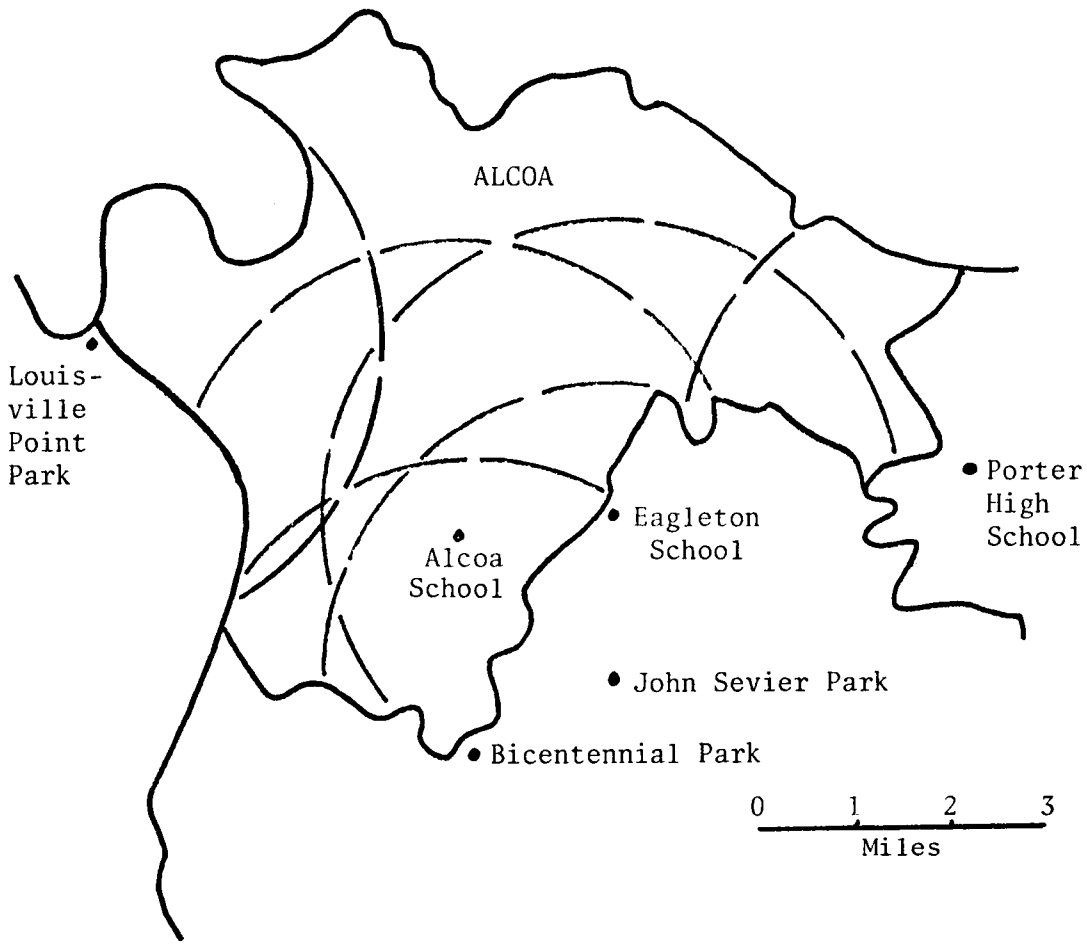


Figure 2. Alcoa County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 49.

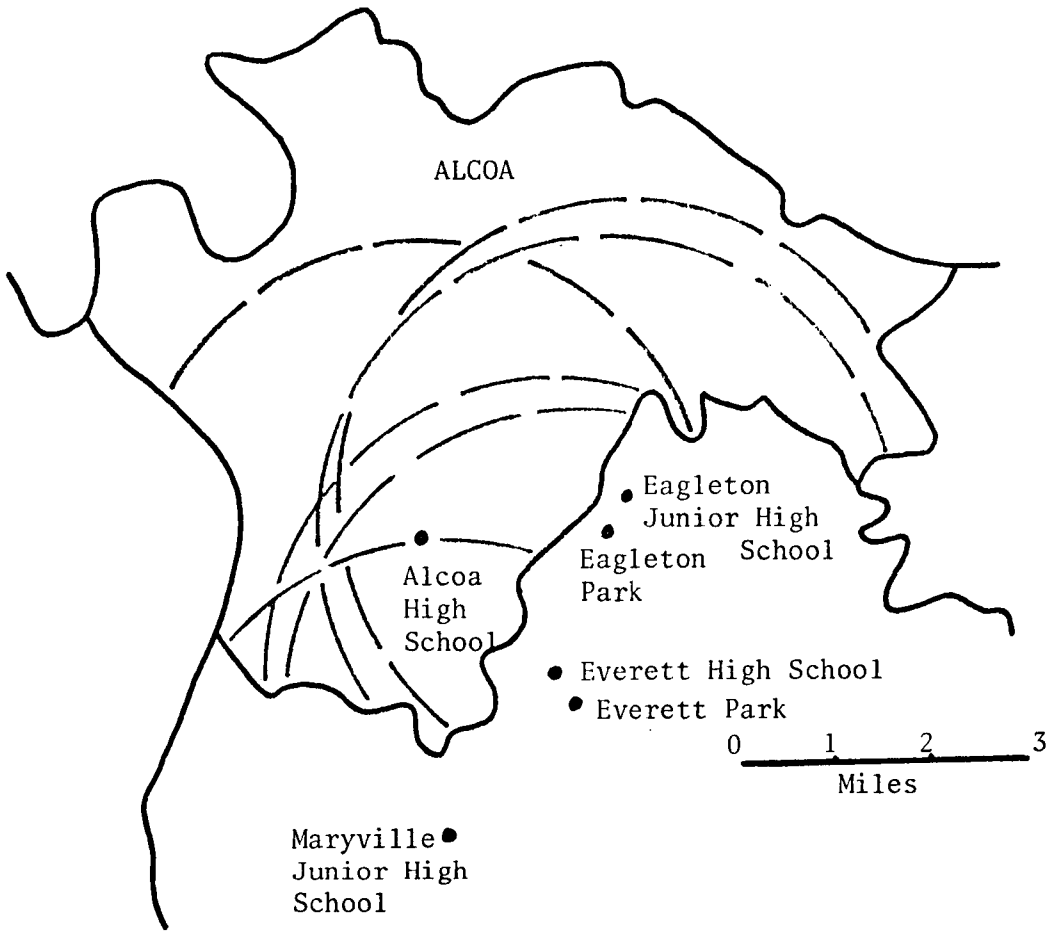


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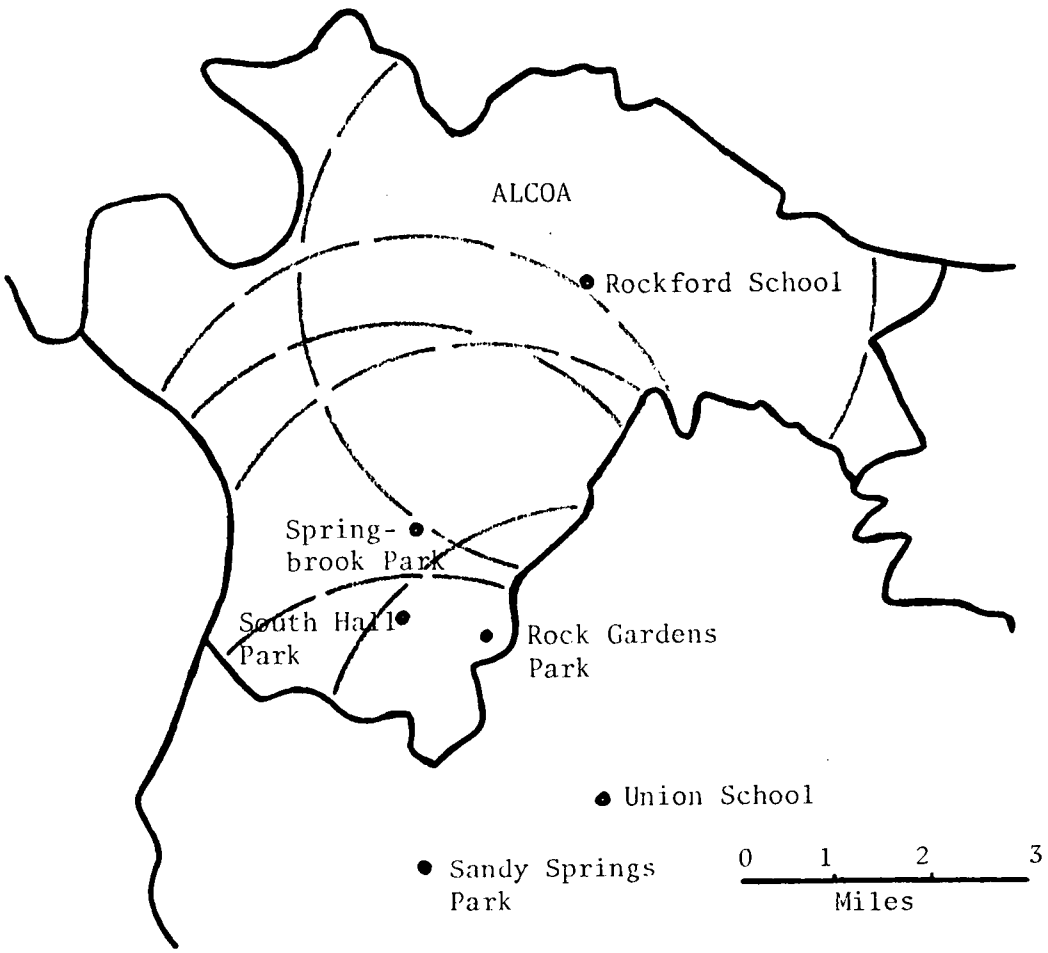


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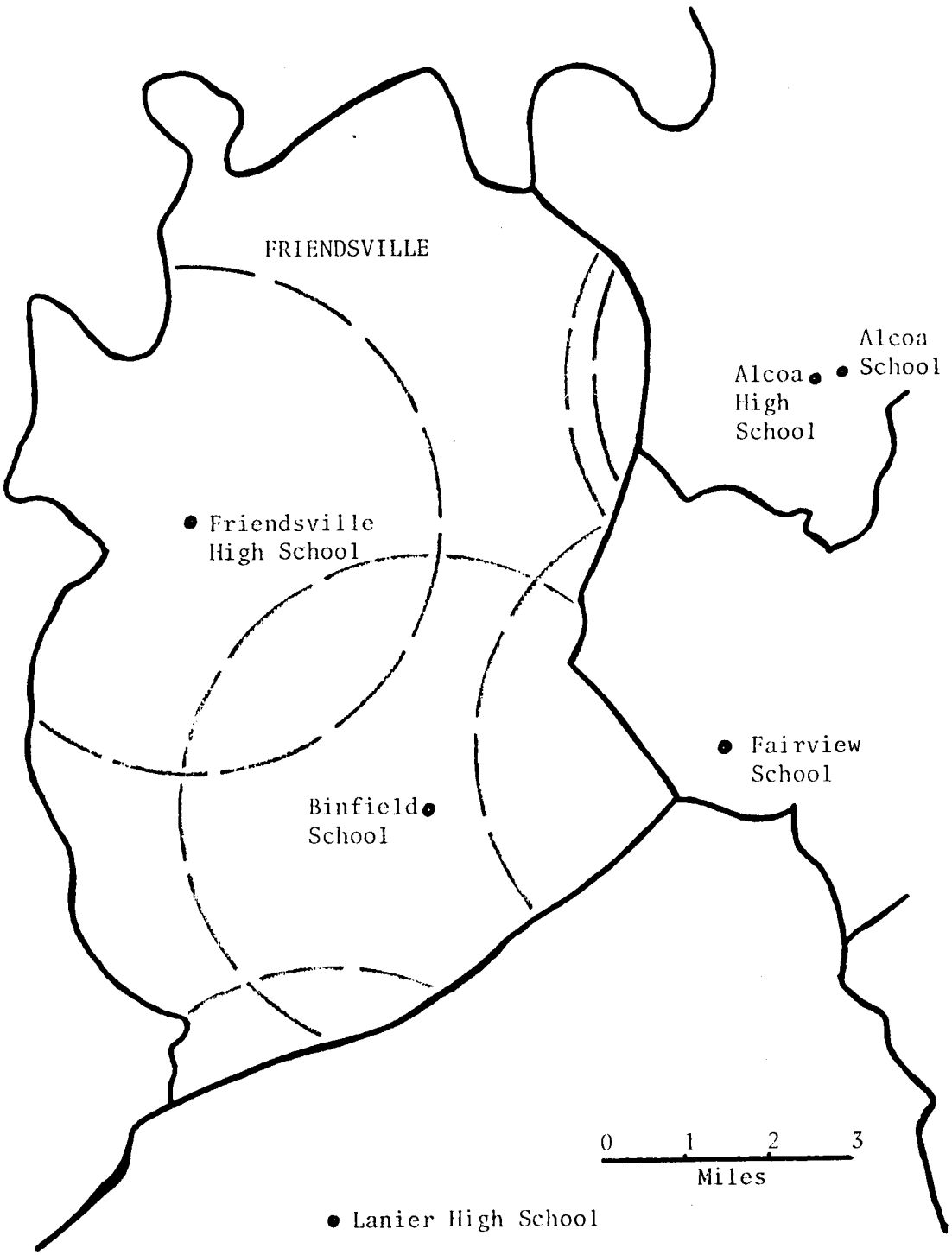


Figure 3. Friendsville County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 26.

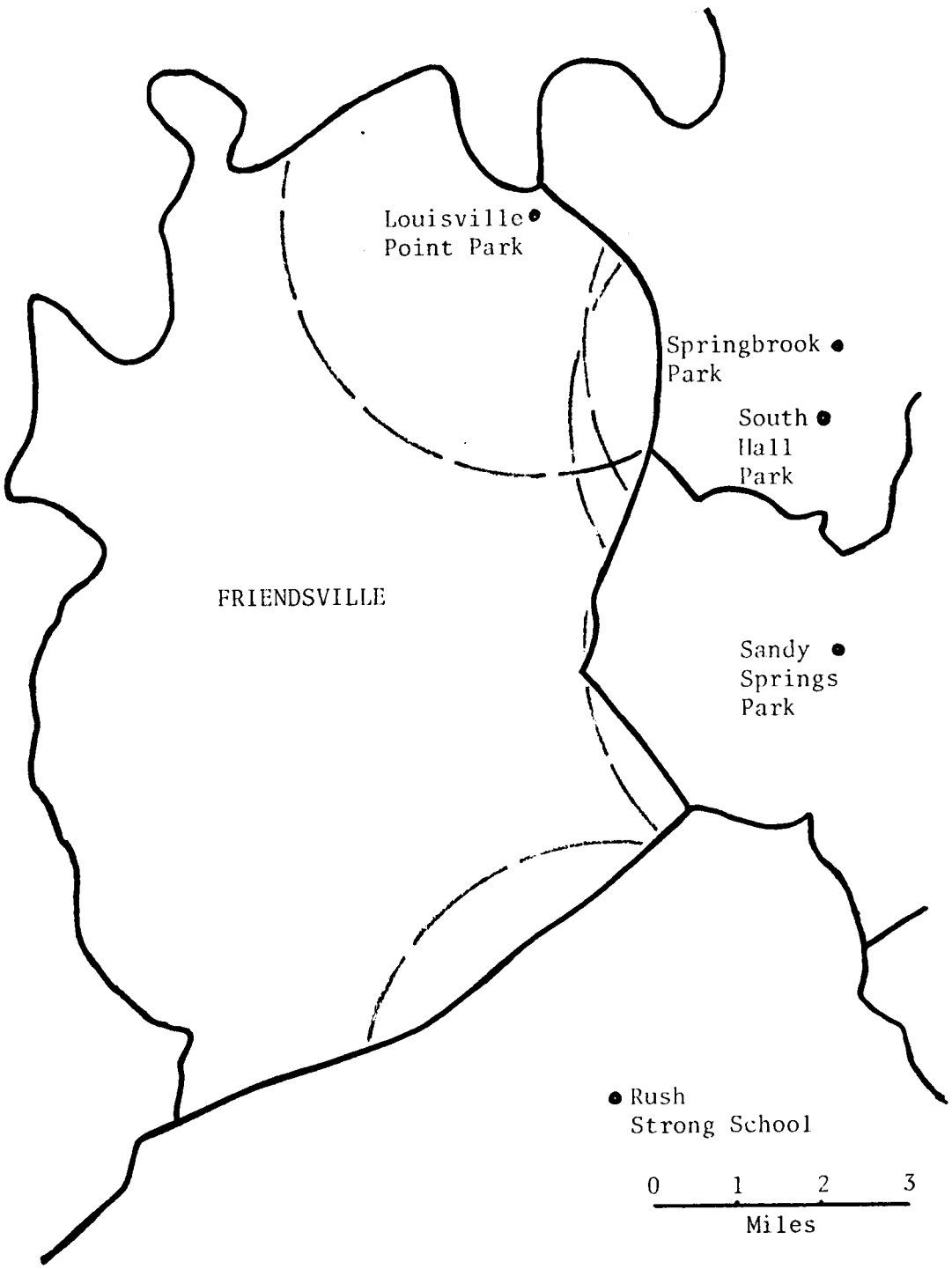


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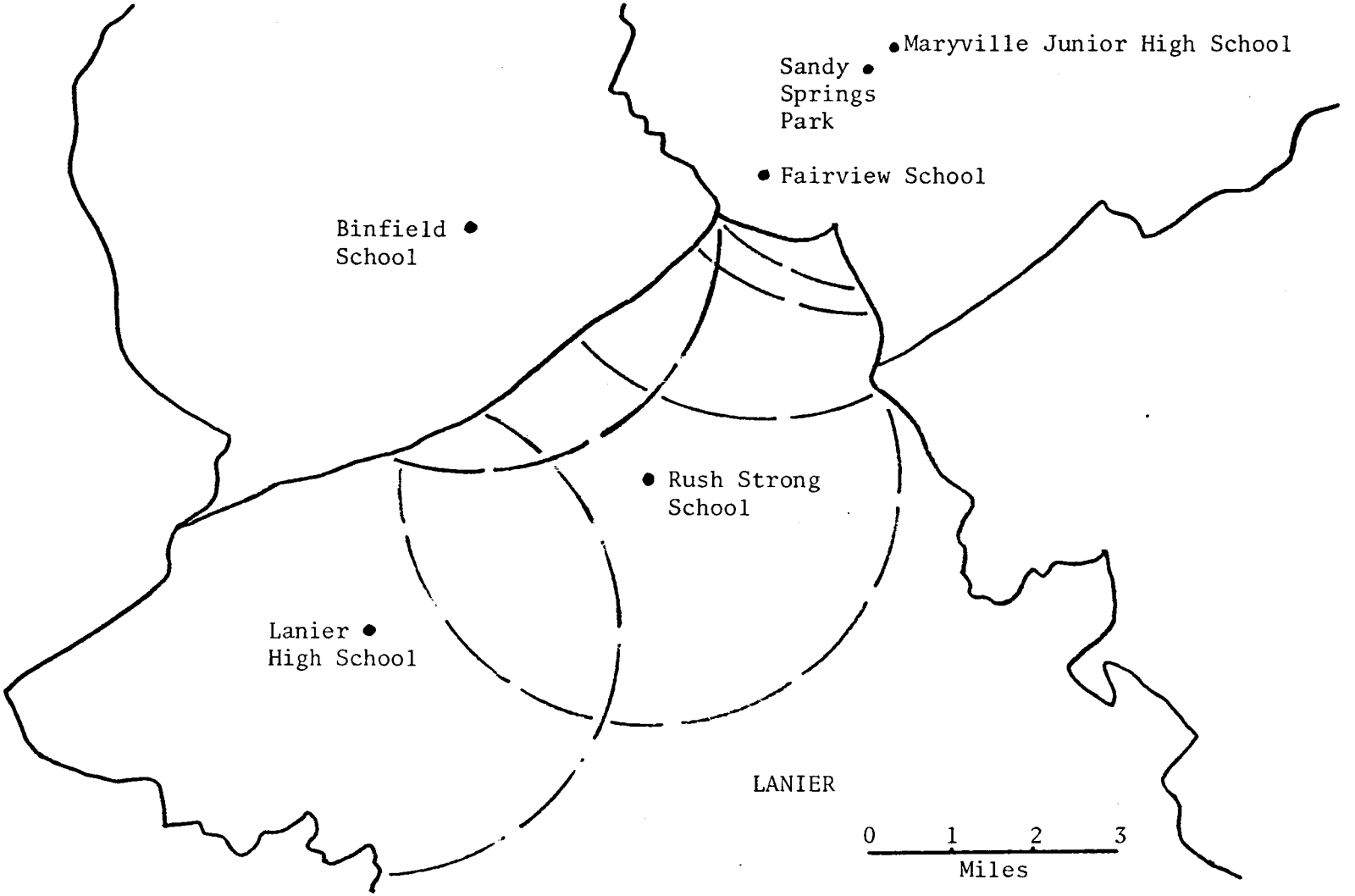


Figure 4. Lanier County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 13.

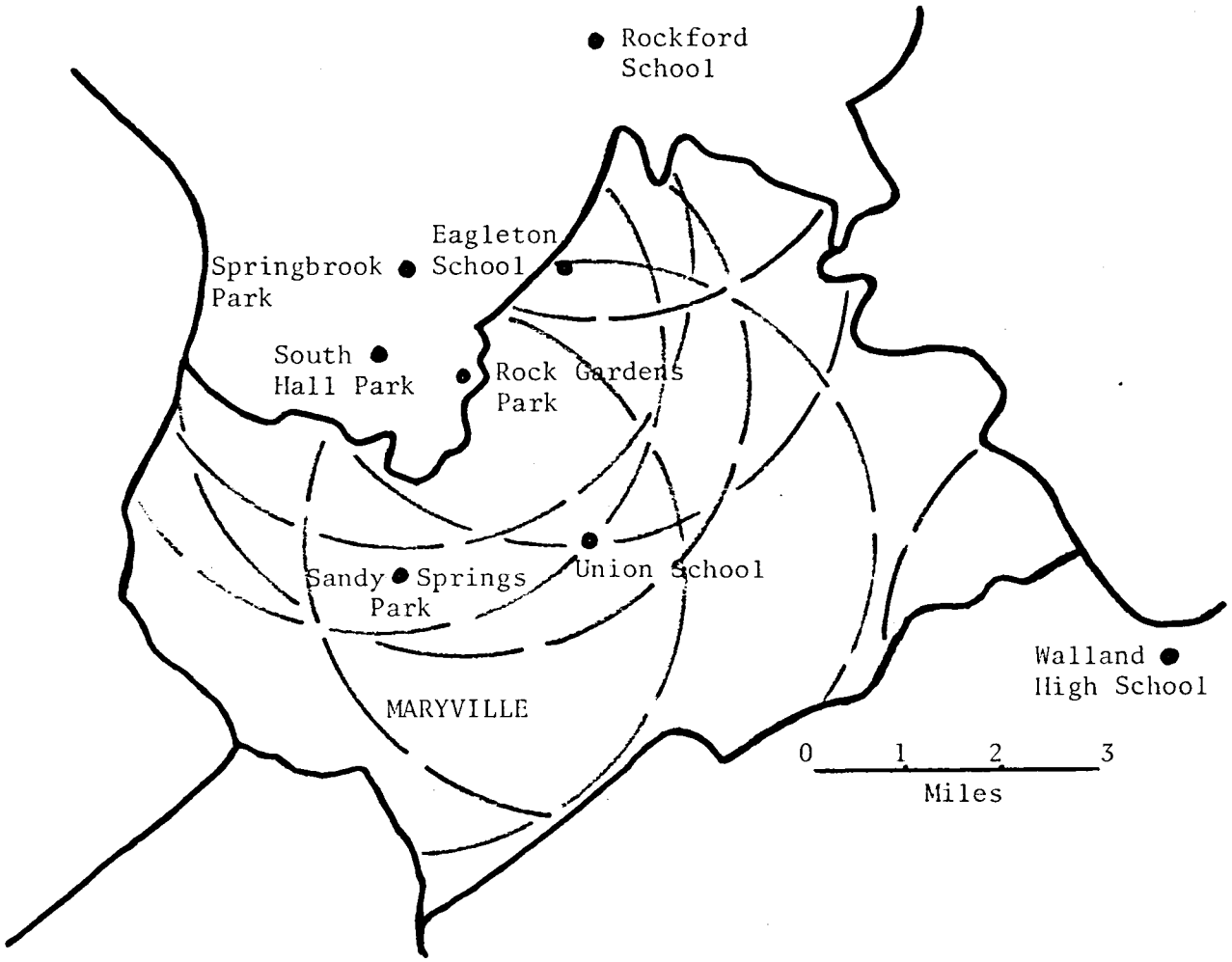


Figure 5. Maryville County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 55.

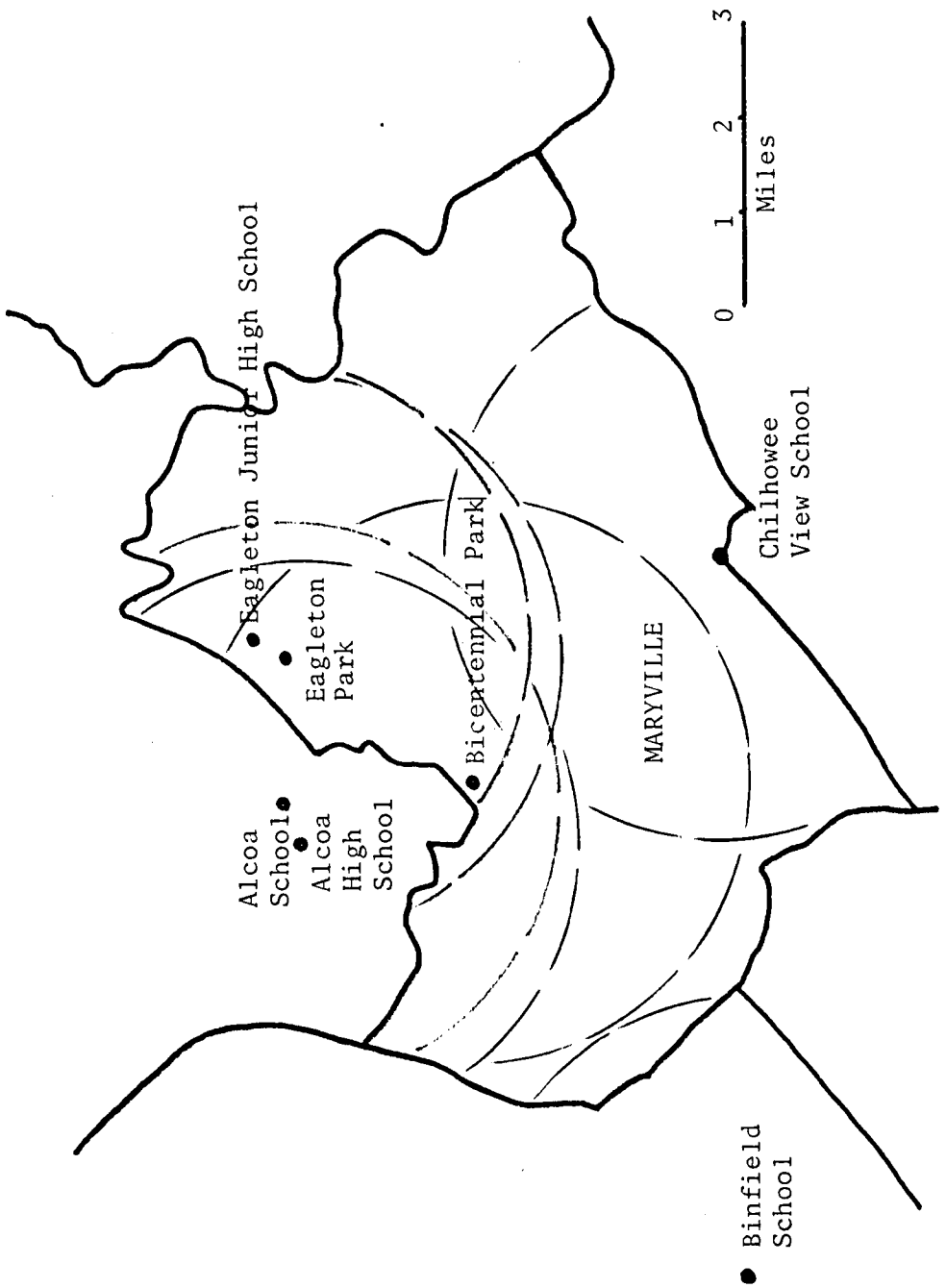


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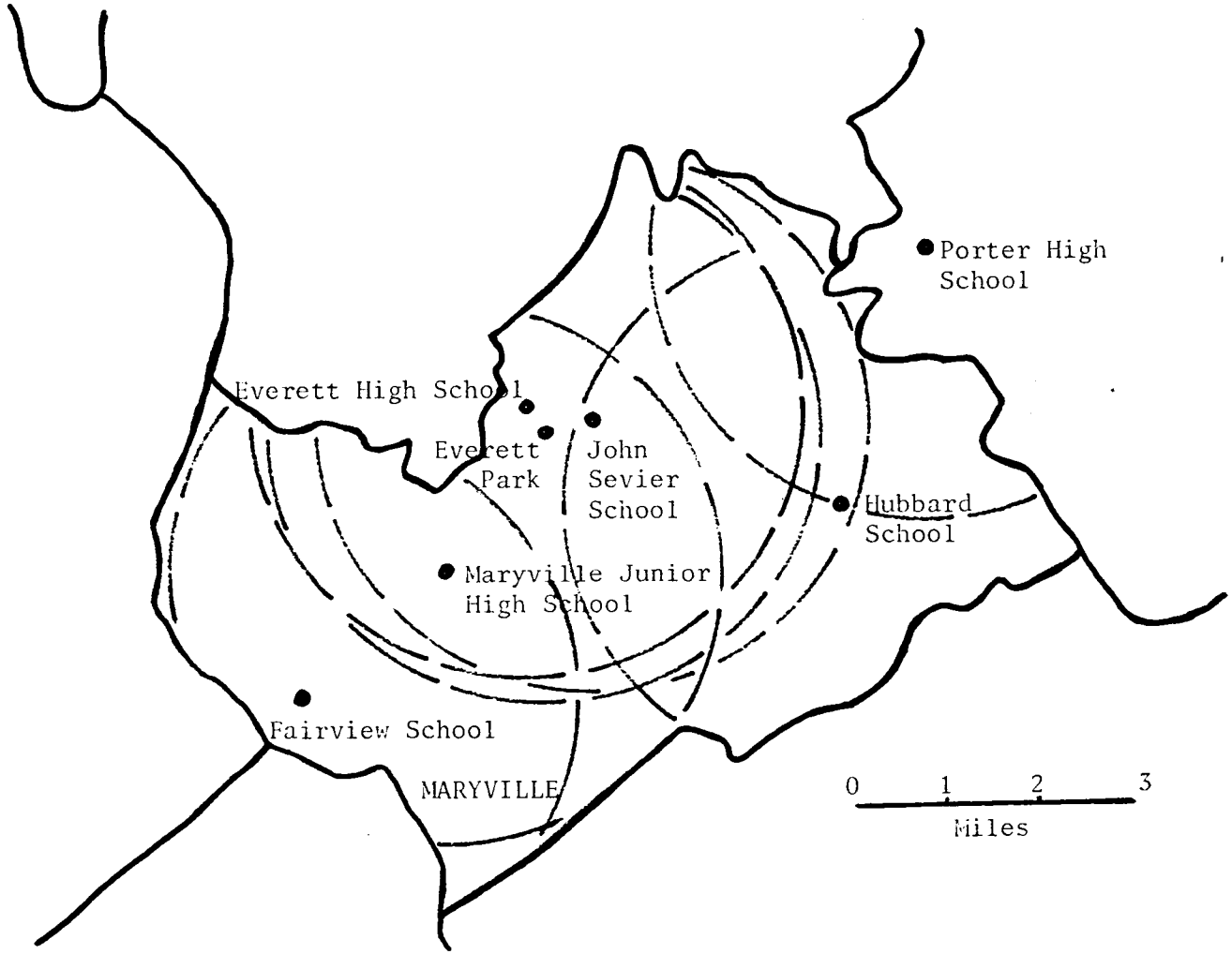


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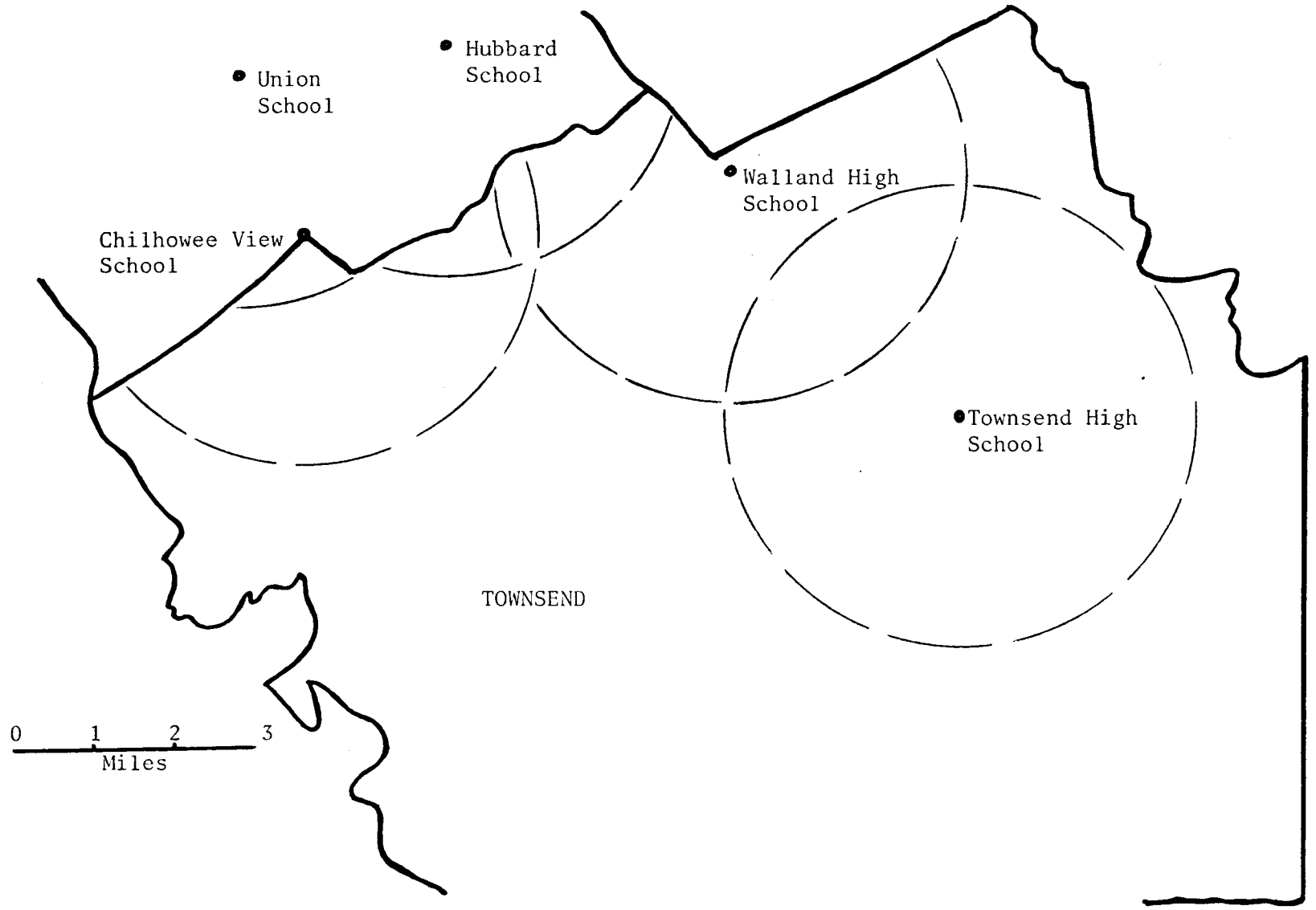


Figure 6. Townsend County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 5.

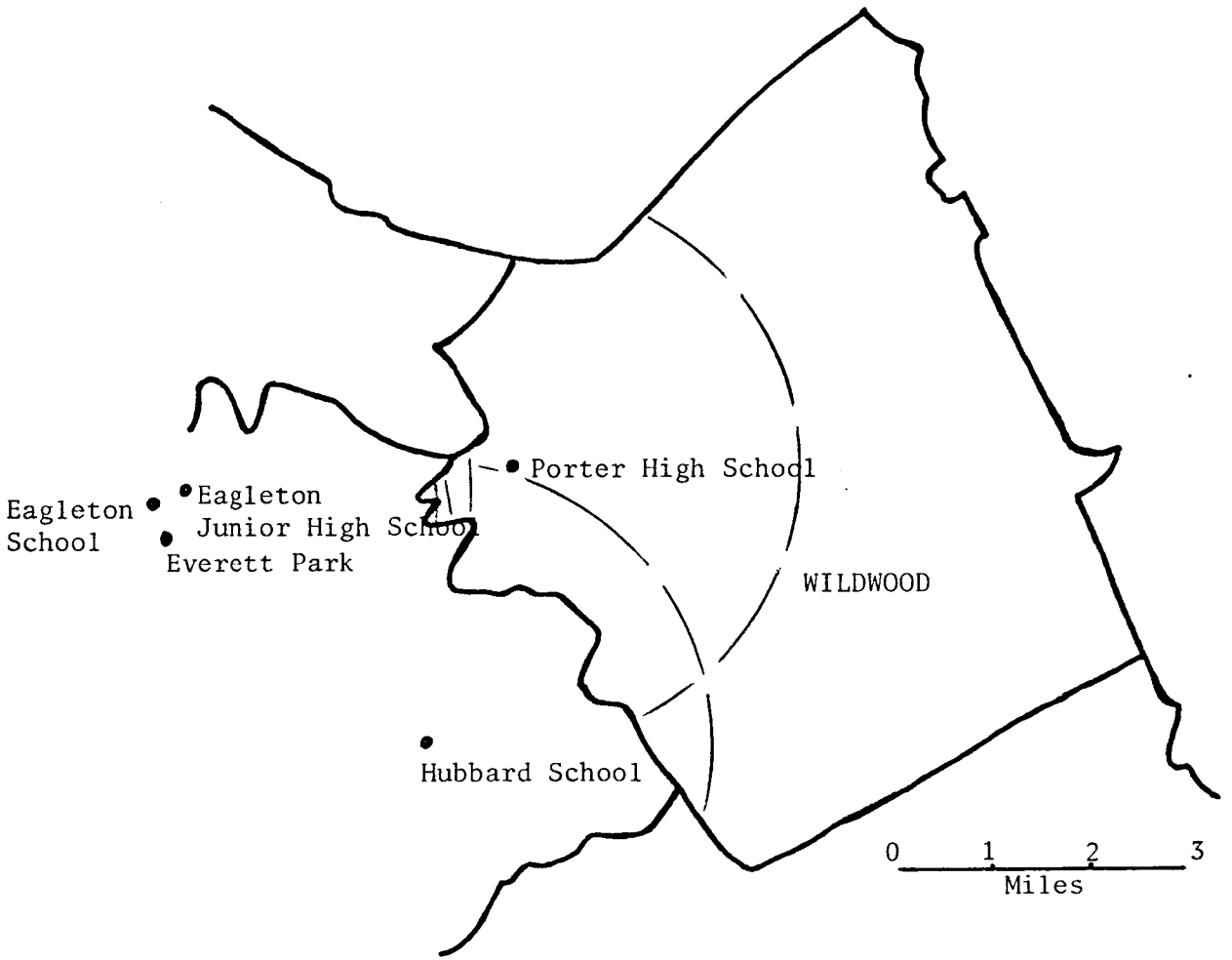


Figure 7. Wildwood County Division: Three Mile Proximity Circles of Major Recreation Facilities. Total - 8.

TABLE A-6

FACILITY PROXIMITY POINT TOTALS:
ALCOA COUNTY DIVISION

Facilities	Proximity Points
Alcoa Elementary School Gym Center	1
Alcoa High School Gym Center	1
Bicentennial Park	1
Eagleton Elementary School Gym Center	1
Eagleton Junior High School Gym Center	1
Eagleton Park	1
Eagleton Park Ballfields (2)	2
Everett High School Gym Center	1
Everett Park	1
Everett Park Ballfields (2)	2
Everett Park Recreation Center	1
Everett Park Tennis Courts (3)	3
John Sevier Park	1
John Sevier Park Swimming Pool	1
John Sevier Park Tennis Courts (6)	6
Louisville Point Park	1
Maryville Junior High School Gym Center	1
Porter High School Gym Center	1
Rockford Elementary School Gym Center	1
Rock Gardens Park	1
Rock Gardens Park Tennis Court	1
Sandy Springs Park	1
Sandy Springs Park Ballfields (3)	3
Sandy Springs Park Tennis Courts (4)	4
South Hall Park	1
South Hall Park Swimming Pool	1
Springbrook Park	1
Springbrook Park Ballfield	1
Springbrook Park Recreation Center	1
Springbrook Park Swimming Pool	1
Springbrook Park Tennis Courts (4)	4
Union Elementary School Gym	1
Total	49

TABLE A-7

FACILITY PROXIMITY POINT TOTALS:
FRIENDSVILLE COUNTY DIVISION

Facilities	Proximity Points
Alcoa Elementary School Gym Center	1
Alcoa High School Gym Center	1
Binfield Elementary School Gym Center	1
Fairview Elementary School Gym Center	1
Friendsville High School Gym Center	1
Lanier High School Gym Center	1
Louisville Point Park	1
Rush Strong Elementary School Gym Center	1
Sandy Springs Park	1
Sandy Springs Park Ballfields (3)	3
Sandy Springs Park Tennis Courts (4)	4
South Hall Park	1
South Hall Park Swimming Pool	1
Springbrook Park	1
Springbrook Park Ballfield	1
Springbrook Park Recreation Center	1
Springbrook Park Swimming Pool	1
Springbrook Park Tennis Courts (4)	4
Total	26

TABLE A-8

FACILITY PROXIMITY POINT TOTALS:
LANIER COUNTY DIVISION

Facilities	Proximity Points
Binfield Elementary School Gym Center	1
Fairview Elementary School Gym Center	1
Lanier High School Gym Center	1
Maryville Junior High School Gym Center	1
Rush Strong Elementary School Gym Center	1
Sandy Springs Park	1
Sandy Springs Park Ballfields (3)	3
Sandy Springs Park Tennis Courts (4)	4
Total	13

TABLE A-9

FACILITY PROXIMITY POINT TOTALS:
MARYVILLE COUNTY DIVISION

Facilities	Proximity Points
Alcoa Elementary School Gym Center	1
Alcoa High School Gym Center	1
Bicentennial Park	1
Binfield Elementary School Gym Center	1
Chilhowee View Elementary School Gym Center	1
Eagleton Elementary School Gym Center	1
Eagleton Junior High School Gym Center	1
Eagleton Park	1
Eagleton Park Ballfields (2)	2
Everett High School Gym Center	1
Everett Park	1
Everett Park Ballfields (2)	2
Everett Park Recreation Center	1
Everett Park Tennis Courts (3)	3
Fairview Elementary School Gym Center	1
Hubbard Elementary School Gym Center	1
John Sevier Park	1
John Sevier Park Swimming Pool	1
John Sevier Park Tennis Courts (6)	6
Maryville Junior High School Gym Center	1
Porter High School Gym Center	1
Rockford Elementary School Gym Center	1
Rock Gardens Park	1
Rock Gardens Park Tennis Court	1
Sandy Springs Park	1
Sandy Springs Park Ballfields (3)	3
Sandy Springs Park Tennis Courts (4)	4
South Hall Park	1
South Hall Park Swimming Pool	1
Springbrook Park	1
Springbrook Park Ballfield	1
Springbrook Park Recreation Center	1
Springbrook Park Swimming Pool	1
Springbrook Park Tennis Courts (4)	4
Union Elementary School Gym Center	1
Walland High School Gym Center	1
Total	53

TABLE A-10

FACILITY PROXIMITY POINT TOTALS:
TOWNSEND COUNTY DIVISION

Facilities	Proximity Points
Chilhowee View Elementary School Gym Center	1
Hubbard Elementary School Gym Center	1
Townsend High School Gym Center	1
Union Elementary School Gym Center	1
Walland High School Gym Center	1
Total	5

TABLE A-11

FACILITY PROXIMITY POINT TOTALS:
WILDWOOD COUNTY DIVISION

Facilities	Proximity Points
Eagleton Elementary School Gym Center	1
Eagleton Junior High School Gym Center	1
Eagleton Park	1
Eagleton Park Ballfields (2)	2
Hubbard Elementary School Gym Center	1
Porter High School Gym Center	1
Walland High School Gym Center	1
Total	8

TABLE A-12

CONVERSION TO SCALE SCORES[a]:
PROXIMITY FACTOR

County Division	Raw Score	Scale Score
Townsend	5	100 (assigned)
Wildwood	8	94 (converted)[b]
Lanier	13	83 (converted)[c]
Friendsville	26	56 (converted)[d]
Alcoa	49	8 (converted)[e]
Maryville	53	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (53 - 5) ÷ 100
= .48

[b]Wildwood scale score = range difference ÷ conversion factor
= (53 - 8) ÷ .48
= 94

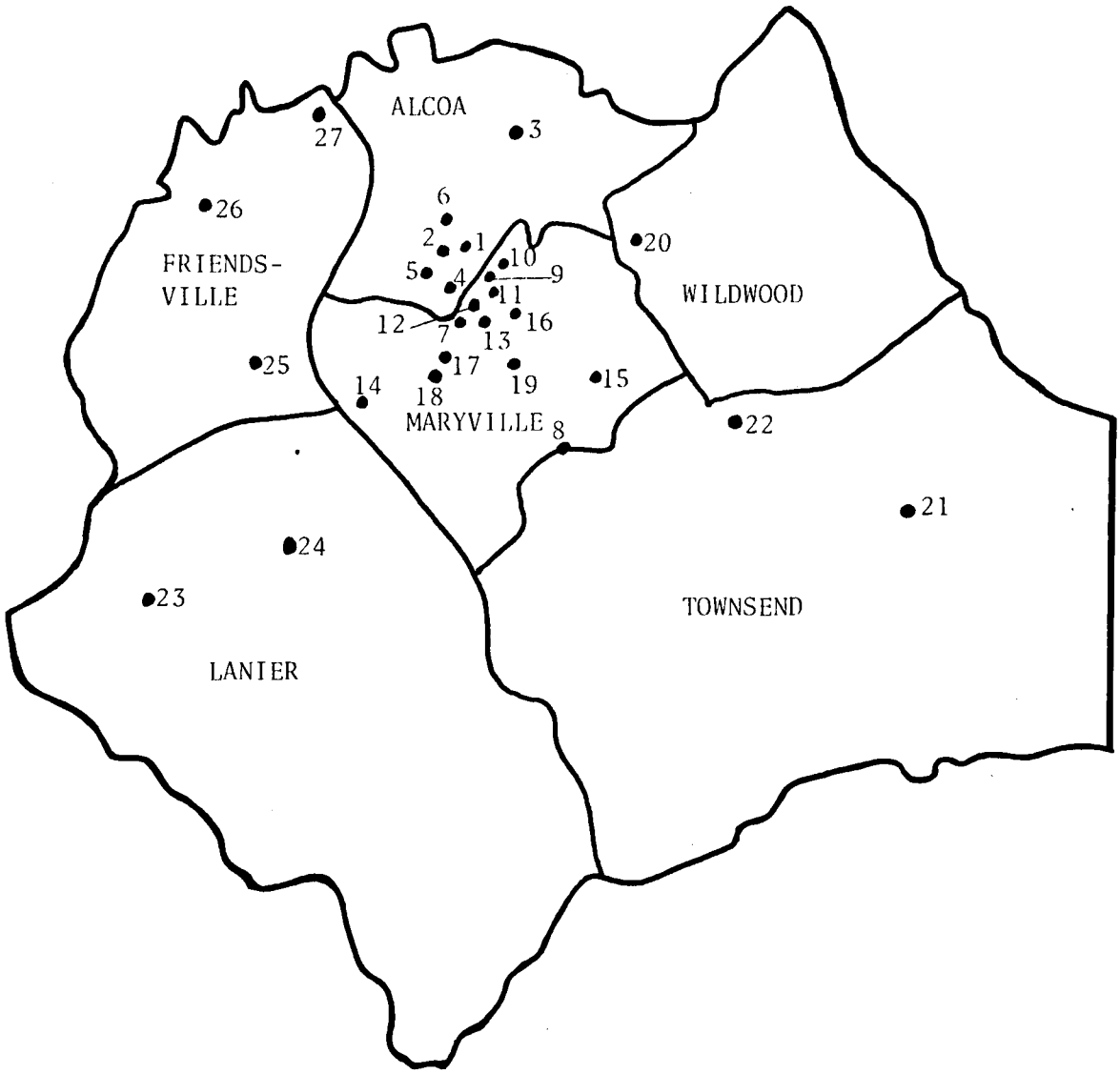
[c]Lanier scale score = range difference ÷ conversion factor
= (53 - 13) ÷ .48
= 83

[d]Friendsville scale score = range difference ÷ conversion factor
= (53 - 26) ÷ .48
= 56

[e]Alcoa scale score = range difference ÷ conversion factor
= (53 - 49) ÷ .48
= 8

APPENDIX C

RECREATION RESOURCE FACTOR DEVELOPMENT MATERIALS



1. Alcoa School
2. Alcoa High School
3. Rockford School
4. Rock Gardens Park
5. South Hall Park
6. Springbrook Park
7. Bicentennial Park
8. Chilhowee View School
9. Eagleton School
10. Eagleton Junior High School
11. Eagleton Park
12. Everett High School
13. Everett Park
14. Fairview School
15. Hubbard School
16. John Sevier Park
17. Maryville Junior High School
18. Sandy Springs Park
19. Union School
20. Porter High School
21. Townsend High School
22. Walland High School
23. Lanier High School
24. Rush Strong School
25. Binfield School
26. Friendsville High School
27. Louisville Point Park

Figure 8. Major Recreation Facilities in Blount County, Tennessee.

TABLE A-13

TOTALS OF MAJOR RECREATION FACILITIES BY COUNTY DIVISION

Major Recreation Facility	Facility Total	Division Total
ALCOA COUNTY DIVISION:		15
Alcoa Elementary School Gym	1	
Alcoa High School Gym	1	
Rockford Elementary School Gym	1	
Rock Gardens Park including tennis court	2	
South Hall Park including swimming pool	2	
Springbrook Park including ballfield, recreation center, swimming pool, and 4 tennis courts	8	
FRIENDSVILLE COUNTY DIVISION:		3
Binfield Elementary School Gym	1	
Friendsville High School Gym	1	
Louisville Point Park	1	
LANIER COUNTY DIVISION:		2
Lanier High School Gym	1	
Rush Strong Elementary School Gym	1	
MARYVILLE COUNTY DIVISION:		35
Bicentennial Park	1	
Chilhowee View Elementary School Gym	1	
Eagleton Elementary School Gym	1	
Eagleton Junior High School Gym	1	
Eagleton Park including 2 ballfields	3	
Everett High School Gym	1	
Everett Park including 2 ballfields, 3 tennis courts, and recreation center	7	
Fairview Elementary School Gym	1	
Hubbard Elementary School Gym	1	
John Sevier Park including swimming pool and 6 tennis courts	8	
Maryville Junior High School Gym	1	
Sandy Springs Park including 3 ballfields and 4 tennis courts	8	
Union Elementary School Gym	1	
TOWNSEND COUNTY DIVISION:		2
Townsend High School Gym	1	
Walland High School Gym	1	
WILDWOOD COUNTY DIVISION:		1
Porter High School Gym	1	

TABLE A-14

CONVERSION TO SCALE SCORES[a]:
NUMBER OF RECREATION FACILITIES FACTOR

County Division	Raw Score	Scale Score
Maryville	11	100 (assigned)
Alcoa	10	88 (converted)[b]
Lanier	5	25 (converted)[c]
Townsend	5	25 (converted)[d]
Friendsville	4	13 (converted)[e]
Wildwood	3	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (11 - 3) ÷ 100
= .08

[b]Alcoa scale score = range difference ÷ conversion factor
= (10 - 3) ÷ .08
= 88

[c]Lanier scale score = range difference ÷ conversion factor
= (5 - 3) ÷ .08
= 25

[d]Townsend scale score = range difference ÷ conversion factor
= (5 - 3) ÷ .08
= 25

[e]Friendsville scale score = range difference ÷ conversion factor
= (4 - 3) ÷ .08
= 13

TABLE A-15

ACREAGE TOTALS OF MAJOR RECREATION FACILITIES BY COUNTY DIVISION

Major Recreation Facilities	Acreage Total	Division Total
ALCOA COUNTY DIVISION:		95
Alcoa Elementary School Gym	1	
Alcoa High School Gym	1	
Rockford Elementary School Gym	1	
Rock Gardens Park	3	
South Hall Park	12	
Springbrook Park	77	
FRIENDSVILLE COUNTY DIVISION:		22
Binfield Elementary School Gym	1	
Friendsville High School Gym	1	
Louisville Point Park	20	
LANIER COUNTY DIVISION:		2
Lanier High School Gym	1	
Rush Strong Elementary School Gym	1	
MARYVILLE COUNTY DIVISION:		104
Bicentennial Park	36	
Chilhowee View Elementary School Gym	1	
Eagleton Elementary School Gym	1	
Eagleton Junior High School Gym	1	
Eagleton Park	10	
Everett High School Gym	1	
Everett Park	20	
Fairview Elementary School Gym	1	
Hubbard Elementary School Gym	1	
John Sevier Park	10	
Maryville Junior High School Gym	1	
Sandy Springs Park	20	
Union Elementary School Gym	1	
TOWNSEND COUNTY DIVISION:		2
Townsend High School Gym	1	
Walland High School Gym	1	
WILDWOOD COUNTY DIVISION:		1
Porter High School Gym	1	

Source: Recreation and Parks Commission of Maryville-Alcoa-Blount County, Tennessee.

TABLE A-16

CONVERSION TO SCALE SCORES[a]:
FACILITY ACREAGE TOTALS FACTOR

County Division	Raw Score	Scale Score
Alcoa	6.57	100 (assigned)
Maryville	3.40	52 (converted)[b]
Friendsville	3.01	45 (converted)[c]
Townsend	.52	4 (converted)[d]
Lanier	.47	3 (converted)[e]
Wildwood	.30	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (6.57 - .30) ÷ 100
= .06

[b]Maryville scale score = range difference ÷ conversion factor
= (3.40 - .30) ÷ .06
= 52

[c]Friendsville scale score = range difference ÷ conversion factor
= (3.01 - .30) ÷ .06
= 45

[d]Townsend scale score = range difference ÷ conversion factor
= (.52 - .30) ÷ .06
= 4

[e]Lanier scale score = range difference ÷ conversion factor
= (.47 - .30) ÷ .06
= 3

TABLE A-17

TOTALS OF PAID STAFF HOURS WORKED:
BY PROGRAMS AND FACILITY LOCATIONS, 1977

Major Recreation Facility	Program	Total Program Hours	County Division Total Hours
ALCOA COUNTY DIVISION:			20,404
Alcoa Elementary School	Gym Center	640	
Alcoa High School	Biddy League	90	
	Football	80	
	Gym Center	221	
	Softball/Baseball	40	
Rockford Elementary School	Gym Center	270	
Rock Gardens Park	Playground	496	
South Hall Park	Swim Pool	4,158	
Springbrook Park	Acrobatics	19	
	Basketball-Summer	229	
	Basketball-Winter	705	
	Baton	233	
	Center Director	798	
	Center Supervision	1,151	
	Dance	88	
	Guitar	8	
	Handicapped	309	
	Playground	514	
	Rook Tourney	27	
	Softball/Baseball	1,578	
	Swim Pool	8,628	
Other	Unidentified	122	
FRIENDSVILLE COUNTY DIVISION:			1,499
Binfield Elementary School	Gym Center	253	
Friendsville High School	Football	50	
	Gym Center	308	
Louisville Point Park	Lakefront	888	
LANIER COUNTY DIVISION:			645
Lanier High School	Football	21	
	Gym Center	344	
Rush Strong School	Gym Center	280	
MARYVILLE COUNTY DIVISION:			27,695
Chilhowee View School	Gym Center	249	
Eagleton Elementary School	Basketball	18	
	Gym Center	194	
Eagleton Jr. High School	Basketball	332	

TABLE A-17 (Continued)

Major Recreation Facility	Program	Total Program Hours	County Division Total Hours
	Football	64	
	Gym Center	280	
Eagleton Park	Baseball	840	
Everett High School	Football	309	
	Gym Center	286	
Everett Park	Center Crafts	297	
	Center Directors	4,160	
	Guitar	36	
	Playground	516	
	Softball/Baseball	3,471	
Fairview Elementary School	Gym Center	264	
Hubbard Elementary School	Gym Center	238	
John Sevier Park	Swim Pool	9,328	
	Tennis	192	
Maryville Junior	Basketball	589	
High School	Dance Recital	11	
	Gym Center	192	
Sandy Springs Park	Playground	465	
	Softball/Baseball	4,254	
Union Elementary School	Gym Center	190	
Other	Unidentified	920	
TOWNSEND COUNTY DIVISION:			518
Townsend High School	Football	27	
	Gym Center	280	
Walland High School	Football	43	
	Gym Center	168	
WILDWOOD COUNTY DIVISION:			678
Porter High School	Football	30	
	Gym Center	648	

Source: Recreation and Parks Commission of Maryville-Alcoa-Blount County, Tennessee.

TABLE A-18

CONVERSION TO SCALE SCORES[a]:
NUMBER OF STAFF HOURS FACTOR

County Division	Raw Score	Scale Score
Alcoa	1,410	100 (assigned)
Maryville	907	61 (converted)[b]
Friendsville	205	5 (converted)[c]
Wildwood	203	5 (converted)[d]
Lanier	153	1 (converted)[e]
Townsend	135	0 (assigned)

[a]Conversion factor = raw score range ÷ 100
= (1,410 - 135) ÷ 100
= 12.75

[b]Maryville scale score = range difference ÷ conversion factor
= (907 - 135) ÷ 12.75
= 61

[c]Friendsville scale score = range difference ÷ conversion factor
= (205 - 135) ÷ 12.75
= 5

[d]Wildwood scale score = range difference ÷ conversion factor
= (203 - 135) ÷ 12.75
= 5

[e]Lanier scale score = range difference ÷ conversion factor
= (153 - 135) ÷ 12.75
= 1

VITA

Joanne Freeman Nelson was born in Sacramento, California on September 13, 1948. She attended a variety of schools in California, Mississippi, Labrador, Arkansas, Nebraska, and Missouri as a member of an Air Force family. She was graduated from Dixon High School in Dixon, California in 1966. The following September she entered the University of Arkansas and in June 1970 she received a Bachelor of Science degree in Physical Education.

After working in the municipal recreation field for seven years in Texas, California, and Tennessee, she began study toward a Master's degree. She received the Master of Science degree in December 1978.

Ms. Nelson is now employed with the Park and Recreation Department in Davenport, Iowa.

She is married to David E. Nelson of Benton, Arkansas.