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THE UNIVERSITY OF OTTAWA

THE USE AND NON-USE OF URBAN PARKS:
ACCESSIBILITY AND SOCIAL CHARACTERISTICS IN RELATION TO
PUBLIC OUTDOOR RECREATION IN SELECTED NEIGHBORHOODS
OF OTTAWA-HULL

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R.D.R.

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PART A

THE SETTING OF THE PROBLEM

CHAPTER I
THE USE AND NON-USE OF URBAN
PARKS AS A RESEARCH PROBLEM

The aim of the present research is to describe and analyze the use of ordinary parks in a single urban situation: the Ottawa-Hull area, Canada's national capital region. A federal capital with a largely bilingual population, the study area provides opportunity for cross-cultural comparisons, but it cannot be assumed to represent other urban areas in North America.

Initially conceived as a study of factors of urban park use, the research soon became transformed into an inquiry of urban park non-use as well. This is the first, striking fact about ordinary city parks: how small a fraction of the population makes use of them; how surprisingly limited is the knowledge even that they exist! Jane Jacobs offers a question which, by its inescapable logic, has become the organizing question of the present research:

Why are there so often no people where the parks are
and no parks where the people are? (Jacobs, 1961, 95.)

This question must strike a sympathetic chord with anyone, such as the author, who has gone to observe the activities of a park first hand. It expresses the reaction of one who assumes, not that people must be attracted to parks, but that people belong in them. It is surprising that they are

so frequently empty. The emptiness is, as may be deduced from Jane Jacobs' question, periodic and recurring. The aim of research becomes, not only to analyze the use of the parks, but also to shed light on this problem of empty parks.

The present study has implications for planning and management of urban parks systems. Existing processes of planning and management are complex and beyond the scope of the present study. However, the already complex nature of urban parks planning and management does not obviate the need for improved scientific understanding of park use. An enlightening illustration both of the complexity of existing management problems, and of the need for more insights to be gained from scientific research, is the experience of New York City's vest pocket parks program. The program was predicated on the simple assumption that vacant lots in "urban core" areas, currently used as junkyards, could be cleaned up and used as parks. Here is how the program worked:

The Coordinator for Housing for the city was named to head a committee which brought together the New York City Planning Commission, the Department of Real Estate, the Sanitation Department, the Health Department, and the Highway Department. The Parks Department was excluded for . . . its unwillingness . . . to undertake the maintenance and operation of parks of less than one acre in size. The Real Estate Department agreed to rent any vacant lot, in city ownership, which was approved by the City Planning Commission, to a neighborhood or civic group for a dollar a year. Several of the anti-poverty groups throughout the City immediately selected one or more lots and applied to the New York City Planning Commission and the Department of Real Estate for their assignment. As soon as a lease had been completed, the Sanitation Department moved in and cleaned the lot.

(Even though it had always been the responsibility of the Sanitation Department to keep such lots cleaned, in actual practice the Department had not done so.) The Highway Department agreed to use its staff and equipment to blacktop the lot, and the Parks Department, which by this time had been drawn into the scheme, provided some help in acquiring equipment.

. . .

It took between three months and a year to complete the design and construction in those playgrounds which actually were constructed. It took something less than a month for vandalism to destroy the carefully conceived designs. (Guggenheimer, 1969, 60-61.)

This experience shows that the creation of parks is not sufficient to ensure that they will function as parks. The present research is focussed on the functions of urban parks, in their social context. The successful planning and management of urban parks systems, however complex in its details, depends ultimately on a clear understanding of the outdoor recreational functions to be served.

In direct contrast to many of the vest pocket parks of New York's program, other parks have "succeeded", and thus stand as models for identifying certain of the positive elements of this complex research problem. In a chapter on "The Uses of Neighborhood Parks" of her book The Death and Life of Great American Cities, Jane Jacobs cites the examples of Rittenhouse Square in Philadelphia and Washington Square in New York as successful parks. Other model parks in the world might include, among others, Hyde Park in London, Chicago's Grant Park, the Jardin des Tuilleries and the

Jardin du Luxembourg in Paris. Descriptions are available of the use patterns in some of these "successful" areas. There is, for example, this description of the use of Rittenhouse Square by journalist Joseph Guess:

First, a few early-bird walkers who live beside the park take brisk strolls. They are shortly joined, and followed, by residents who cross the park on their way to work out of the district. Next come people from outside the district, crossing the park on their way to work within the neighborhood. Soon after these people have left the square, the errand-goers start to come through, many of them lingering, and in mid-morning mothers and small children come in, along with an increasing number of shoppers. Before noon the mothers and children leave, but the Square's population continues to grow because of people coming from elsewhere to lunch at the art club and other restaurants around. In the afternoon mothers and children turn up again, the shoppers and errand-goers linger longer, and school children eventually add themselves in. In the late afternoon the mothers have left but the homeward-bound workers come through--first those leaving the neighborhood, and then those returning to it. Some of these linger. From then on into the evening the square gets many young people on dates, some who are dining out nearby, some who live nearby, some who seem to come just because of the nice combination of liveliness and leisure. All through the day, there is a sprinkling of old people with time on their hands, some people who are indigent, and various unidentified idlers. (Jacobs, 1961, 97-98.)

An analogous description of use of the Jardin du Luxembourg was provided by one of the young would-be writers of André Gide's novel, Les Faux-Monnayeurs, nearly a half-century before:

Ce que je voudrais, disait Lucien, c'est raconter l'histoire, non point d'un personnage, mais d'un endroit,— tiens, par exemple, d'une allée de jardin, comme celle-ci, raconter ce qui s'y passe— depuis le matin jusqu'au soir. Il y viendrait d'abord des bonnes d'enfants, des nourrices avec des rubans. . . Non, non. . . d'abord des gens tout gris, sans sexe ni âge, pour balayer l'allée, arroser l'herbe, changer les fleurs, enfin préparer la scène et le décor avant l'ouverture des grilles, tu comprends? Alors, l'entrée des nourrices. Des mioches font des pâtés de sable, sè chamailent; les bonnes les giflent. Ensuite il y a la sortie des petites classes, et puis les ouvrières. Il y a des pauvres qui viennent manger sur un banc. Plus tard des jeunes gens qui se cherchent; d'autres qui se fuient; d'autres qui s'isolent, des rêveurs. Et puis la foule, au moment de la musique et de la sortie des magasins. Des étudiants, comme à présent. Le soir, des amoureux qui s'embrassent; d'autres qui se quittent en pleurant. Enfin, à la tombée du jour, un vieux couple. . . Et, tout à coup, un roulement de tambour: on ferme. Tout le monde sort. La pièce est finie. . .

Et ça n'est pas tout; ça n'est pas tout! reprit Lucien avec ardeur. Je voudrais, dans une espèce d'épilogue, montrer cette même allée, la nuit, après que tout le monde est parti, déserte, beaucoup plus belle que pendant le jour; dans le grand silence, l'exaltation de tous les bruits naturels: le bruit de la fontaine, du vent dans les feuilles, et le chant d'un oiseau de nuit . . .

(Gide, 1925, 15-16.)

Parks such as these, surprisingly similar in use despite their separation in both space and time, serve as a socially given standard of high quality urban recreational land use. They are unusually large, however, and serve city neighborhoods that are unique even by world standards. The general case is that of local neighborhood or community parks, ordinary "city parks", the ones closest to most of the people most of the time.

The major topics of inquiry to be addressed in this dissertation are three: (1) How are ordinary urban parks used? (2) What particular conditions of accessibility and other social-geographic characteristics of communities affect the use and non-use of urban parks? (3) What are some implications of the research results for improving urban park systems planning and management? Following the background material and research strategy outlined in Part A, these three major topics are examined in detail, at the large scale of analysis of four small parks located in diverse neighborhoods of the City of Ottawa. The specific findings of the study appear in Part B, which covers the use of these four parks and the social-geographic factors affecting park use. The general implications of the findings both in terms of a comprehensive model to explain park use, and with respect to planning and management concerns, are presented in Part C.

CHAPTER II

BACKGROUND STUDIES AND RESEARCH QUESTIONS

Academic research into urban park use is of recent origin. The present discussion will be focused on the period since the publication of an article by Marion Clawson entitled "Open (uncovered) Space as a New Urban Resource" (1969). The article presented numerous research possibilities in the general field of open space planning and management, as well as some research questions applying specifically to urban park use. These specific questions can be paraphrased as follows:

1. How intensively are existing parks, playgrounds and similar areas used?
2. What is the demand for parks, playgrounds and similar areas?
3. What is the range of activities people engage in after work and after school?
4. What portion of this demand should be met inside the urban area, and what portion should be met outside?

Each of these questions is considered in the course of this dissertation. Other questions posed in the Clawson article deal with the more general subject of "open space", which extends beyond the scope of the present study.

The Clawson article lists several "functions" of urban open space areas: to provide light and air to buildings; to provide per-

spective and vistas of the urban scene; to provide recreation in the broadest sense of that term; to provide ecological protection of important values, such as recharge to groundwater, or prevention of flood damage in flood-prone areas, preservation of unique areas, and the like; to serve as city-forming devices or influences; and to reserve presently vacant areas for one or more of these uses, or for more active public uses, such as schools, at some future date (Clawson, 1969, 140-41). Among the items in this list, the present research is concerned exclusively with "recreation in the broadest sense of that term". A broad definition of recreation can include activities such as dog walking which occur in urban parks, and also the use of areas such as vacant lots and sidewalks which are not formally designated as "recreational" land.

The Need to Establish Priorities

Riots of 1965 through 1968 in major United States cities resulted in a reexamination of political priorities in such areas. Urban parks systems were among the municipal services to be reevaluated at this time, with the result that the need for further scientific research into the subject became apparent. The City of Los Angeles developed an instrument for determining neighborhood recreation priorities following the Watts riot of 1965 (Staley, 1969, 69-74). Existing facilities and personnel were compared

with "needs" as measured by a given community's average rank on four ordinal scales: youth population, population density, median family income, and juvenile delinquency rate. It was unknown at the time whether any of these four variables had any relationship at all with a community's use of, much less need for, municipal park services. It is instructive to note that although Watts ranked highest in "need" among Los Angeles communities at the time, the facilities and services provided in Watts were already superior to those in many communities of the city, lagging only slightly behind another well-known area: Beverly Hills. At the time of the Watts riot, eight other Los Angeles communities stood in greater comparative need of recreation services than Watts.

A comment on the Los Angeles instrument for determining recreation priorities outlined some of the weaknesses of the variables constituting the "index of need", and concluded:

. . . Until we approach a point where we can say that expanding recreation resources in a particular way will satisfy a particular set of behavioral criteria for the persons affected, we have very little basis upon which to plan recreation programs. (Hendon, 1969, 189-91.)

It appears that the point at which it is possible to allocate urban recreational resources rationally according to "a set of behavioral criteria" has not been reached at this writing. Within the past year, authors having returned

to this question, have had to content themselves with expressing the theoretical possibility of such rational criteria for establishing priorities. The idea is presented in the conditional tense:

. . . factors influencing visitation . . . could be weighted, then incorporated along with observed visitation into a formula to define an 'index of need'. (Van Doren and Hodges, 1972, 353.)

In contrast to the optimism of researchers in the field, practitioners of urban park planning may be less convinced of the feasibility of using research results to help set priorities:

The amount of open space and its location, as well as the number and size of indoor recreation facilities that must be set aside in relation to acreage or population density, cannot be computed by simple mathematics. Too many variables are involved. (Guggenheimer, 1969, 55.)

Nevertheless, some progress has been made in recent years toward answering the practical question posed in the latter part of the decade of the 1960's, of determining priorities for a more rational allocation of urban park resources.

Background Studies

The exchange of new insights in this field has been facilitated by the appearance of an interdisciplinary

journal devoted entirely to leisure and outdoor recreation concerns: the Journal of Leisure Research. Several articles appearing in this journal have helped to shed light on at least two of the research questions paraphrased above: the factors influencing demands for urban playgrounds, and the range of after-work and after-school leisure activities. These and other studies related to the same questions are described briefly below.

Demand for Urban Playgrounds

The demand for urban playgrounds in Baltimore, Maryland was investigated in the framework of an "optimal location model" in which a function of the number of visitors in a given playground was used as the dependent variable in a multiple regression analysis incorporating such variables as distance, intervening opportunities, and neighborhood social and economic characteristics (Dee, 1970).

The dependent variable of the Baltimore study was the "rate of attendance" at urban playgrounds, calculated as the proportion of children living in an area who visited the playground being studied on a given interview day. Two different measures of distance were applied to find the effect of household distance as a factor of the attendance rate. Straight-line distances proved less significant than the minimum number of street crossings required to reach the playground from a given residential block, in explaining

the variation of the observed visit rates. Using the street crossing measure, the attendance rates tended to decline with the square of the distance from the playground (Dee and Liebman, 1970, 145-59). This suggests a possible analogy between the demand for urban playgrounds and the "gravity model" of Newtonian physics. This analogy is discussed in more detail in Chapter VIII.

Other elements of the demand for playgrounds identified in the Baltimore study included: the number of backyard wading or swimming pools in an area, the number of backyard swing sets, and the distance from the study playground to the next closest playground, that is, the competition of another area. Surprisingly, the number of backyard swimming facilities tended to increase rather than decrease demands for swimming in the local playground; the effects of backyard swing sets and distance to a competing area were in the expected, negative direction.

Among the most significant of the Baltimore findings was that income was not related to playground attendance to a significant degree. There were significant differences in attendance rates according to the type of playground facility, the ages of those in attendance, and whether those in attendance were black or white children. No significant relationship was found between the type of facility provided and the age groups found to be using the facility, nor between the rate of attendance at a facility and whether the surface of the

playground was blacktop or grass.

The tendency of visits to decline with distance away from a playground was central to the analysis of Baltimore playgrounds and is the key to the "Hotelling-Clawson" model of park demand to be discussed in Chapter VIII. This same relationship has been studied from a slightly different approach for registrants in the recreation programs of Columbus, Ohio playgrounds (Mitchell, 1973, 261-66). Although the distance relationship identified in the Columbus study is possibly spurious (Rugg, 1974), it appears to support the conclusion of declining visit rates with distance from a playground. Regardless of the existence of such a "spatial gradient", the Columbus data in any case show that urban playgrounds tend to draw visitors up to a maximum distance of one-half mile, after which attendance rates decline rapidly.

Range of After-Hours Activities

The range of after-work or after-school activities is considerable, and therefore there is need for simplification of this complex question. Such simplification has been provided by factor analyses of leisure activities in four midwestern communities of the United States: Minneapolis, Minnesota; and River Forest, Glencoe, and Elk Grove Village, Illinois. Adult leisure activities in these communities were found to be patterned according to three underlying dimensions

TABLE 1
THREE VARIMAX FACTORS FOR FOUR COMMUNITIES^a

Leisure Activity	Factor A-D				Factor P				Factor S			
	Min	RF	GI	EG	Min	RF	GI	EG	Min	RF	GI	EG
	II	I	I	II	I	II	II	I	III	III	III	III
Television	-19	-45	-18	-12	18	02	16	26	-32	-19	-24	-22
Clubs, Organizations	24	18	28	--	05	23	03	09	28	13	16	--
Visit Friends	26	22	--	--	07	12	--	--	-15	-04	--	--
Read Books	28	30	17	21	-15	-03	-12	-04	34	40	45	20
Card Games	-03	04	--	08	25	19	04	37	-09	01	11	12
Paint or Draw	09	24	03	06	05	02	07	11	28	17	02	19
Participate in Dramatics	-18	-08	-11	-11	02	-19	05	-02	33	23	13	27
Listen to Recordings	44	29	--	--	-02	-11	--	--	19	15	--	--
Work on House, Garden	05	10	--	07	08	-04	--	-13	-27	-35	--	-20
Adult Classes	26	19	15	34	11	13	13	05	36	42	43	22
Attend Sports Events	08	20	14	14	43	32	28	35	11	09	02	25
Boating	30	23	02	21	01	-06	04	09	32	49	36	29
Plays, Concerts, Art Shows	41	25	26	24	-12	--	07	08	57	64	54	42
Reading	03	08	12	-08	31	32	03	42	01	-02	03	09
Go Darning	40	33	29	26	-12	-10	-05	09	-08	-13	-20	04
Salsa Indoors	-06	66	31	24	22	24	18	26	44	09	27	31
Play Basketball	55	41	--	--	12	17	--	--	-13	-18	--	--
Flirt	47	63	67	48	17	17	24	-20	-07	11	05	03
Play Tennis	24	16	30	24	08	10	11	01	47	31	35	33
Play Golf	09	16	12	04	25	42	23	22	32	39	22	36
Play Softball	25	22	--	--	44	35	--	--	12	63	--	--
Playcatching	49	46	64	48	-02	02	04	06	35	42	22	13
Golfing	15	22	17	30	37	15	38	26	01	-10	-05	15
Hunting	-10	-22	-05	05	56	55	35	32	-07	-11	05	11
Fishing	02	-11	02	07	68	69	32	53	-17	-34	04	-10
Boating	44	15	20	29	61	38	63	52	13	26	05	01
Driving for Pleasure	54	23	34	29	11	-06	-15	10	-17	-16	-05	-16
Salsa Outdoors	63	52	53	28	44	29	35	41	32	39	21	16
Skiing	12	22	10	11	22	17	53	21	42	23	32	35
Tobogganing, Sledding	39	--	27	--	30	--	24	--	06	--	10	--
Ice Skating	40	26	48	38	20	38	36	26	29	35	36	26
Hiking	57	57	51	58	16	14	03	05	14	23	13	11
Percent Variance	20	51	56	15	58	14	17	57	12	13	15	12

^a Bishop, 1970, 164-65

called "active-diversionary", "potency", and "status" (Bishop, 1970). Outdoor recreational activities were included among those identified with each of the three factors, as shown in Table 1.

The same list of activities was explored in three of the same communities, for high school age respondents, among whom four underlying dimensions of leisure activities were identified. An "outdoor-nature" factor resembled the adults' "status" behavior; the activities of the remaining "active-diversionary" dimension of adult behavior were apportioned, for the teen-agers, between a "sports" and an "adolescent-social" factor (Witt, 1971). Among the high school respondents, outdoor recreational activities were included among the significant variables in all but the "adolescent-social" factor, as shown in Table 2.

Research Questions

Four questions, paraphrased from an article by Marion Clawson, were presented at the beginning of this chapter. It has been shown that the questions of the demand for playgrounds and the range of activities people engage in after work and after school have been explored in previous studies. Not covered in the studies mentioned are questions of the demands for parks and similar areas other than playgrounds in urban areas, and of the intensity of use of urban parks of various kinds. The final question of policy, that is, what

TABLE 2
FOUR VARIMAX FACTORS FOR THREE COMMUNITIES (After Witt)^a

Leisure Activity	Factor S			Factor ON			Factor AD			Factor SA		
	Min	RF	GL	Min	RF	GL	Min	RF	GL	Min	RF	GL
	I	I	I	II	II	II	IV	III	III	III	IV	IV
Television	-07	16	08	-27	-02	-08	-28	-29	-22	23	14	-20
Clubs, Organizations	-01	02	-02	01	-03	05	41	51	49	02	10	-01
Visit Friends	05	17	--	13	15	--	-04	06	--	51	33	--
Read Books	03	02	--	08	04	--	30	41	--	09	00	--
Card and Board Games	19	37	34	-01	04	11	-04	11	-12	37	12	-03
Paint or Draw	-03	-05	-19	09	18	15	16	25	19	16	03	09
Participate in Dramatics	-08	-07	-04	02	-01	-06	30	22	31	04	10	09
Listen to Recordings	-03	-02	-10	-04	-01	10	04	10	05	42	31	29
Attend Sports Events	47	49	53	-05	01	00	22	03	05	17	30	25
Movies	-02	-04	09	08	02	06	17	02	12	32	36	27
Plays, Concerts, Art Shows	-02	--	--	11	--	--	52	--	--	03	--	--
Bowling	23	33	35	10	-00	18	04	07	-10	25	-07	04
Go Dancing	13	11	14	-07	09	02	19	01	04	40	57	49
Swim Indoors	09	24	32	10	17	21	22	20	10	13	-02	05
Play Basketball	57	56	66	-09	00	04	-13	-02	-03	13	10	-02
Picnic	-09	05	01	49	18	36	20	47	47	07	07	00
Play Tennis	28	22	16	21	10	13	34	31	18	-05	-01	05
Play Golf	40	36	41	06	16	-19	16	-05	-21	-07	11	13
Play Softball	47	58	--	23	00	--	03	03	--	16	02	--
Bicycling	--	09	06	--	05	37	--	47	29	--	-13	-19
Camping	08	24	17	54	33	50	09	23	07	02	-21	03
Hiking or Walking	-18	-02	-05	39	18	44	22	52	50	16	-04	01
Hunting	32	24	08	33	44	21	-20	-05	-05	14	-05	27
Fishing	33	31	22	54	48	46	-23	02	-12	09	-07	15
Boating	19	04	13	65	79	53	09	16	-02	04	16	22
Drive for Pleasure	01	08	-01	16	08	07	-08	-18	-05	42	50	43
Swim Outdoors	19	09	11	56	44	46	07	28	08	01	15	17
Skiing	16	13	02	33	36	21	28	07	-06	05	23	27

TABLE 2--Continued

Leisure Activity	Factor S			Factor ON			Factor AD			Factor SA		
	Minn I	RF I	GL I	Minn II	RF II	GL II	Minn IV	RF III	GL III	Minn III	RF IV	GL IV
Tobogganing, Sledding	12	26	04	47	29	47	15	24	12	05	21	11
Ice Skating	41	32	10	14	16	39	10	18	-04	07	13	-04
Parties	12	03	05	-04	12	-01	32	08	10	47	61	50
Baseball	63	65	--	10	10	--	-19	-13	--	05	-01	--
Football	77	67	--	12	20	--	-10	-22	--	07	-06	--
Hockey	56	54	--	14	20	--	03	-15	--	-04	01	--
Hobbies	--	20	--	--	12	--	--	22	--	--	06	--
Musical Instrument	--	02	-05	--	-02	07	--	42	25	--	-04	-10
Play and Concert	--	-03	01	--	-04	-05	--	46	62	--	07	14
Art Show and Museum	--	-08	-03	--	10	28	--	33	36	--	06	16
Water Ski	--	06	--	--	77	--	--	03	--	--	23	--
Volleyball	--	08	54	--	-07	16	--	27	16	--	19	-04
Ping Pong or Billiards	--	52	44	--	12	14	--	07	-27	--	04	19
Handball or Squash	--	35	43	--	04	19	--	-05	-02	--	-04	00
High School Events	--	--	42	--	--	-12	--	--	33	--	--	27
Softball or Baseball	--	--	67	--	--	12	--	--	-07	--	--	-01
Percent Variance	42	36	35	21	21	23	11	13	12	15	10	12

a Witt, 1971, 215-16

portion of the demand for urban parks should be met inside the urban area, depends upon a thorough appraisal of each of the other three questions.

The present study extends knowledge of urban parks use and non-use through a detailed analysis of household outdoor leisure activities and local park use in selected neighborhoods of Ottawa-Hull. The approach used in the study was initially guided by the so-called "Hotelling-Clawson model of park demand", which is described in Chapter VIII. The model is essentially a conventional economic demand schedule, except that distance travelled is substituted for the price paid to enjoy a recreational experience in a park.

Previous studies have suggested numerous factors other than distance to help explain differences in the demand for urban parks. Indeed, one would expect distance to be a relatively minor factor in urban areas, where numerous means of transportation are available to most people for reaching any desired destination. The present study focuses on one such additional factor: the social characteristics and possible cultural differences among potential park users in various neighborhood settings. The Ottawa-Hull area was especially suitable for this purpose.

The questions posed by Clawson all relate to the

organizing theme of the use and non-use of urban parks. The questions are restated below, in the form in which they are to be investigated in the present study:

1. How intensively are existing parks; playgrounds and similar areas used? To what extent are they not used?
2. What is the "distance-demand" for local parks in selected neighborhoods of Ottawa-Hull? To what extent is this a demand for "playgrounds" only?
3. What are the social characteristics of park users and potential park users? Where does the use of parks fit in with more general patterns of outdoor leisure activities for various segments of the population? Which social characteristics are most closely related to urban parks use at present?
4. What portions of existing and potential demands for urban outdoor recreation, not currently being served, can and should be provided for in local urban parks?

These questions will be examined with reference to four local parks and the neighborhoods surrounding each park in Ottawa-Hull. The parks were selected to reflect similar kinds of facilities, which therefore had the same physical "attractiveness", in order to control this source of variation while

examining the influences of accessibility and social characteristics in different neighborhood settings. The selection of study areas and analysis of park facilities are discussed, respectively, in Chapters III and IV.

CHAPTER III

SELECTION OF STUDY AREAS WITHIN OTTAWA-HULL

The study of urban park use and non-use is set in an unusual metropolitan area, offering particular opportunities for research on this topic. Within Ottawa-Hull, four communities were selected to represent a variety of social and geographic conditions in this diverse urban milieu.

The Setting of Ottawa-Hull

As one approaches Ottawa-Hull from any direction, one immediately has the impression that it is a city of parks and open spaces. Recreational parks within the city limits of Ottawa, Hull, Rockcliffe Park Village, and Vanier occupy on the order of a thousand acres of land, or about one acre for every 500 inhabitants. Immediately beyond the city limits to the south lies an enormous Green Belt of preserved farm and forest acreage; to the north, more tens of thousands of acres in the Gatineau Park. Still other wide expanses have been set aside for a Central Experimental Farm within the city of Ottawa, and for existing and proposed parkways winding through every section of the metropolis.

The half-million residents of metropolitan Ottawa-Hull represent a diversity of cultures. A substantial proportion are fluent in both official languages of Canada, and many speak other languages as well. A national capital, Ottawa-Hull enjoys a very high level of cultural amenities in proportion to its size. It is a destination of international tourism and a focal point of national and international political life. Even the resident population are largely transients, with cultural backgrounds and experiences in other areas across Canada and around the world.

With so much recreational land available and such a diverse and sophisticated population, there is potential for the expression of a full range of urban recreational behavior in Ottawa-Hull. The setting of the city affords an opportunity to explore the influence of cultural differences and other social characteristics on observed patterns of use and non-use of urban parks.

The Study Areas

Within the Ottawa-Hull metropolitan area, four study areas were chosen to reflect a diversity of social characteristics. Criteria used in the selection included: language spoken, socio-economic characteristics, and type of residential milieu.

Two communities were chosen in the older part of the city of Ottawa, its densely populated "urban core": Centre-Town and Basse-Ville. Centre-Town was an area of older single-family, duplex and apartment dwellings inhabited by people from a variety of ethnic backgrounds, including Italian, other European, and rural English and French-speaking Canadian groups. Basse-Ville (or Lower-Town) had been a homogeneous French working-class neighborhood, but it was in process of urban renewal at the time of the survey. Nevertheless, the study concentrated on the older, established households: comparatively low value but owner-occupied single and multi-family homes in a socially stable environment prior to urban renewal, with a substantial development of large institutional land uses, especially those of the Catholic Church. The portion of the study conducted in the Basse-Ville area can never be duplicated: by the summer of 1972 the residences included in the survey of this area had been torn down.

Two communities were selected in newer areas of "suburban" residences: Hawthorne Meadows and Bel-Air Heights. Hawthorne Meadows was located at the extreme southeastern corner of the Ottawa city limits. It was bordered at the time of the study by open space and pasture land to the east and south, but the land was controlled by railroads and destined for eventual industrial development. The

subdivision consisted mainly of middle-level single-family dwellings inhabited by English-speaking and some bilingual (English and French-speaking) families. It had recently been "invaded" by a densely populated rent-to-income project of the Ontario provincial government, which was located at the corner of Russel and Walkley Roads. A third major traffic artery, St. Laurent Boulevard, completed the triangular boundary of this unusually well-defined residential neighborhood. Toward the high-growth direction of the city, to the west, away from planned industrial developments, numerous residential subdivisions sprawl along the Queensway. The Bel-Air Heights community was chosen to represent this relatively affluent, predominantly English-speaking section of the metropolis.

In sum, the Ottawa-Hull metropolitan area offered the opportunity to explore park use in communities with divergent social and geographic characteristics. The four community areas selected to represent these various residential environments were Centre-Town, Basse-Ville, Hawthorne Meadows and Bel-Air Heights. The location of the metropolis, and of each community area selected for study within the metropolis, are shown in Figure 1.

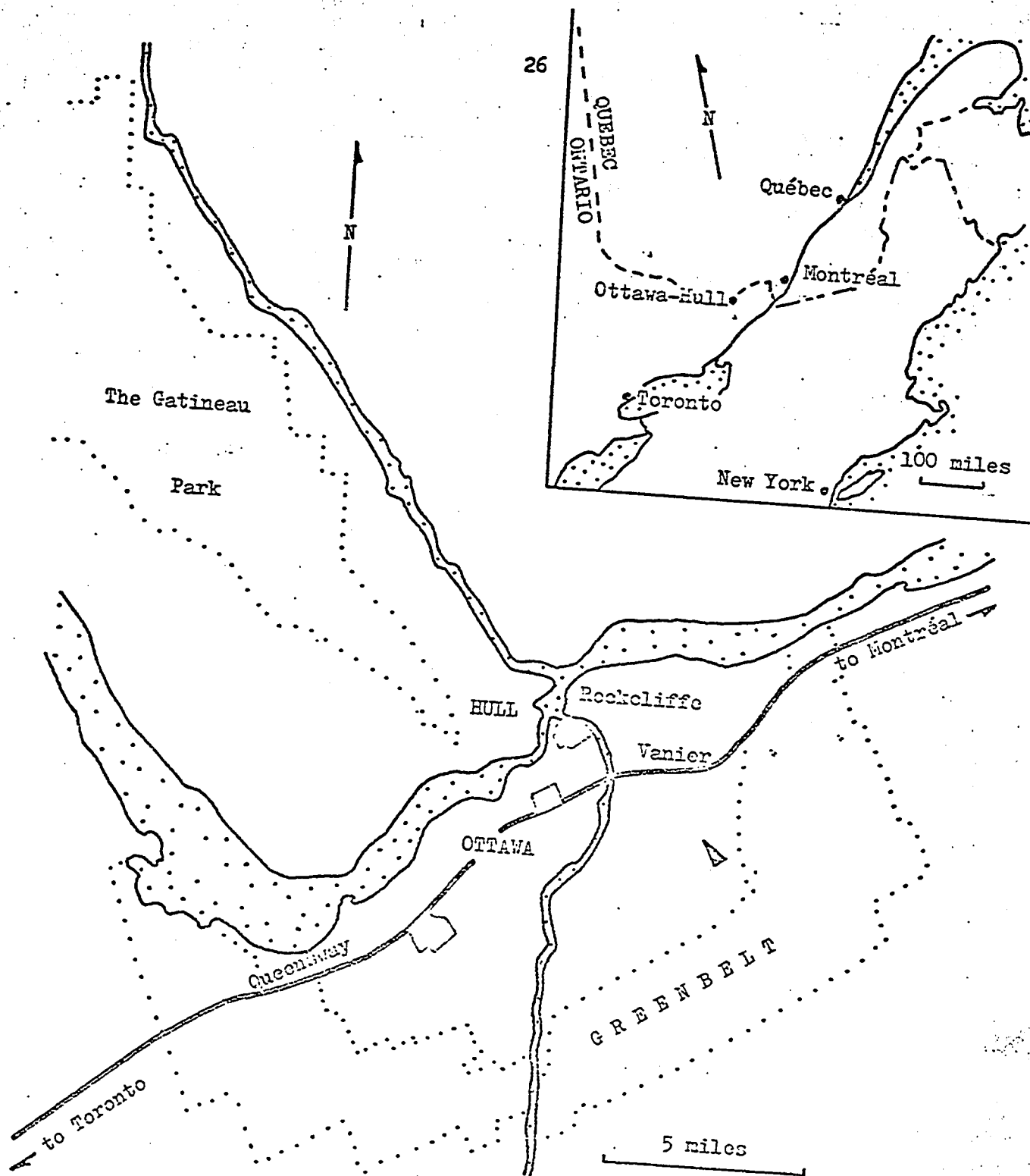


Fig. 1. Location of Study Areas (□)

rdr

Strategy of Surveys

One park was selected for detailed investigation within each of the four community areas. The rationale for park selection is outlined more fully in Chapter IV: essentially, the same park functions and park types were studied in different communities, so that observed differences in the use of a park would reflect social rather than park differences.

The use of the selected parks was examined by a park user survey. Part of the information gained in the park user survey included the home addresses of the visitors. This information provided a basis for delineating residential "zones of influence" around each park. In only one case, that of Hawthorne Meadows, did the park zone of influence coincide with political or physical boundaries of the given community areas.

A household mail questionnaire survey was conducted of the residential zones of influence of each of the four parks. This survey provided additional information on the use of parks and other leisure activities of households, and served as a basis for analyzing the use of parks in relation to the social characteristics of households.

The details of the survey procedure are appended (Appendix II). The survey results are presented and discussed in Part B of this dissertation.

Characteristics of Sample Households

The mail questionnaire survey resulted in responses from households with a wide variety of characteristics. In this regard, the survey strategy was completely successful.

Responses were received from households of single individuals as well as from households with more than ten members. The distribution of household sizes was closely similar to that of the metropolitan area as a whole, as indicated in Figure 2. A full spectrum of age groups was represented (see Figure 3). Nineteen questionnaires were returned in useable form from the least populated study area, with substantially higher numbers of questionnaires received from each of the other three areas. The rate of response was above 25 percent in all four study areas. Although the rates of return varied from one neighborhood to another, differences in population density and zones of influence of the selected parks tended to offset the effects of response rates (see Table 49, Appendix II).

Other than to sample representative households in different residential environments, the major criteria for the selection of study areas were ethnic and status differences, as indicated by language spoken and incomes of sample households. In these respects, the sample was somewhat biased, but nevertheless a full range of household characteristics was adequately represented in the survey returns.

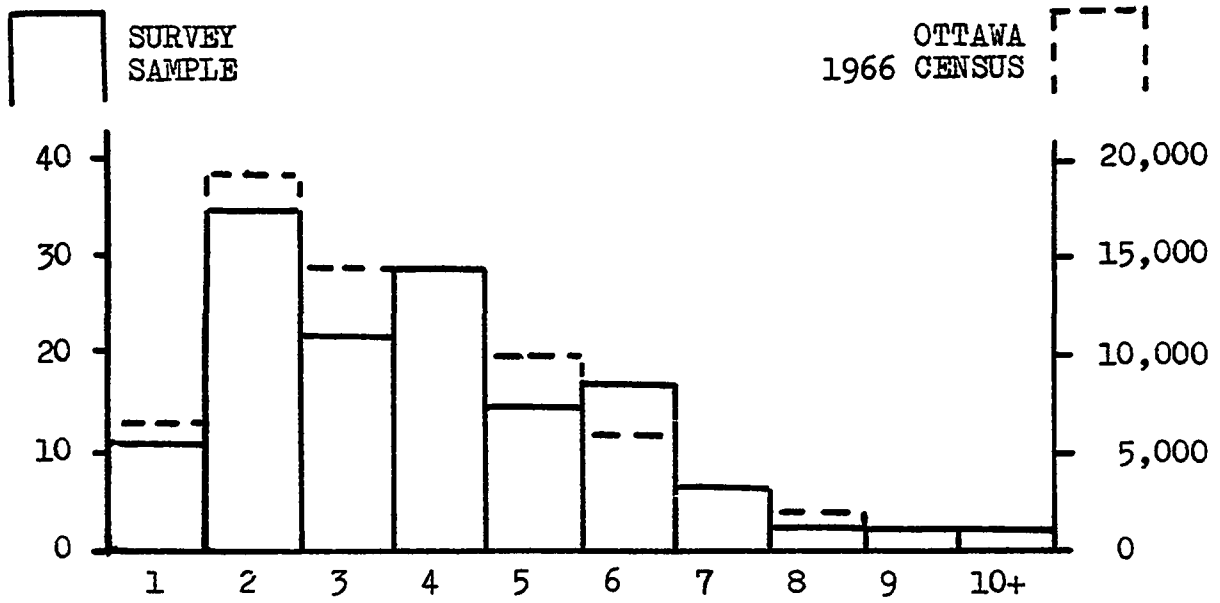


Fig. 2. Sizes of Sample Households

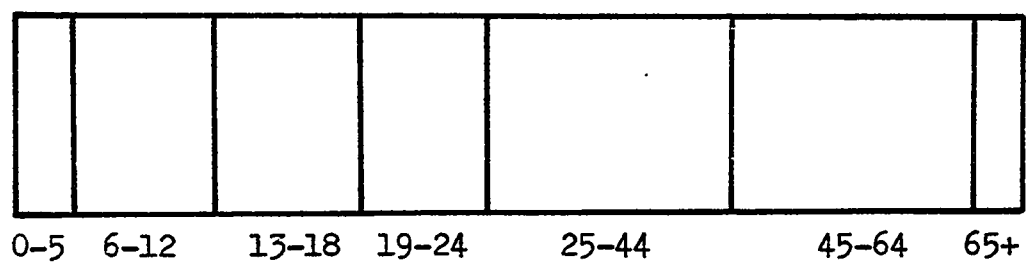


Fig. 3. Ages of Respondents

Two different measures of language group are available from the questionnaire. Respondents were asked to specify the language spoken at home. English was spoken in 91 households of the sample, French in 21, and both English and French in 19. Italian was spoken in 5, other European languages in 5, and non-European languages in 4 respondent households (see Figure 4). The other measure is simpler, and perhaps more significant: the questionnaire was filled out either in French or in English. Of the total of 40 French or bilingual households, only 24 completed the questionnaire in French. Only 5 of the bilingual households answered in French. Four of the unilingual French households, nevertheless answered the questionnaire in English. This result may reflect the fact that the present adult Franco-Ontarian population generally attended secondary school in English, hence may have adjusted to using English in formal communications. Some bias was probably introduced into the questionnaire itself, which was composed by the author, whose mother tongue is American English.¹ Taking both these biases into account, an unusual degree of dedication to the French language may be assumed to be indicated by a respondent's choice to answer the questionnaire in French.

¹An Italian-speaking respondent noted three minor errors in French syntax in the French version of the questionnaire.

The incomes of respondent households were well apportioned through the range of values. The modal income was between 10 and 15,000 dollars, which is in keeping with the professional character of basic employment in the city, and which, unlike the figures available from Statistics Canada, measures total household rather than just family income, and includes transfer payments in addition to taxable income.

The income distribution of those responding in French was different from that of the overall sample, with heavier concentrations at both ends of the spectrum: 20 per cent above \$15,000 and 17 per cent below \$3,000. The comparison of sample household incomes is shown in Figure 5.

It turned out that the bulk of park use in the four study areas was by children. For this reason, the social characteristics of the children in respondent households had to be taken into account as well. Over 60 per cent of the households in the sample had children of school age living at home. Of this number, about half were attending public grade schools, one-third separate schools, and one-sixth institutions of higher education. Among French households with children, three-fourths enrolled their children in separate schools, one-fourth in public schools. Considering the children's school attendance characteristics, again the mail questionnaire survey was successful in

Fig. 4. Language(s) Spoken at Home

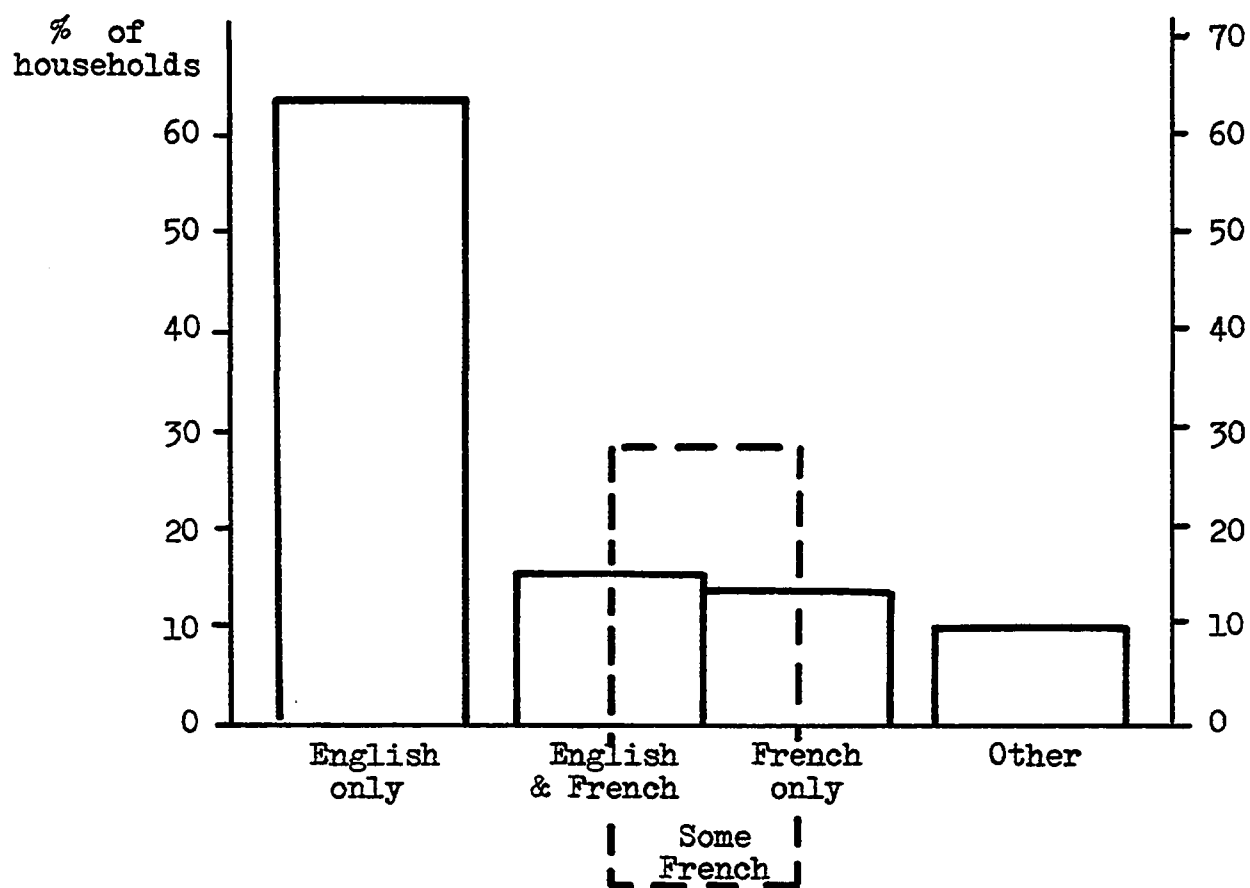
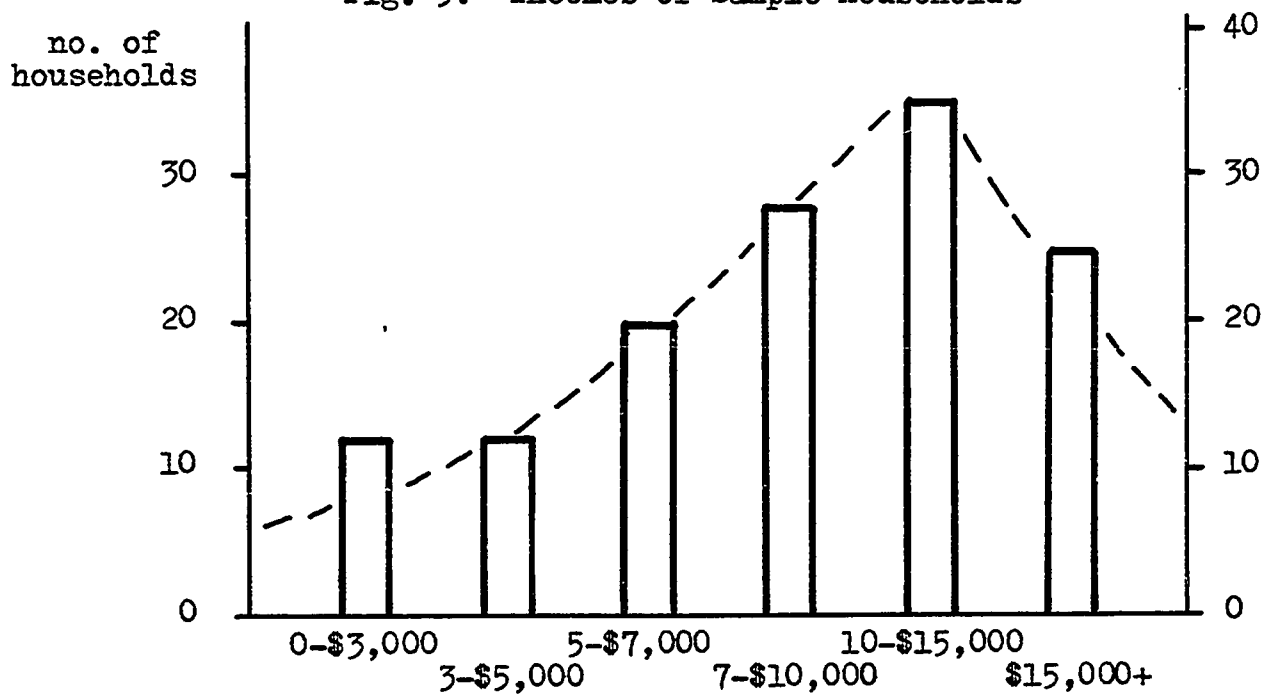


Fig. 5. Incomes of Sample Households



reaching a full and balanced range of respondent households.

The relationships between these and other household characteristics and park use are taken up in detail in Chapter VII. Before this theme is resumed the intermediate chapters consider the observed patterns of park use in each study area, and the degree to which the observed use simply reflects the accessibility of the parks to potential users.

Meanwhile, a prerequisite to describing the use of parks is the selection of parks for detailed description and subsequent analysis. This immediate task is the topic of Chapter IV, which concludes the preliminary setting of the problem in Part A of the dissertation.

CHAPTER IV

SELECTION OF PARKS FOR DETAILED ANALYSIS

In a recent survey of urban parks use, the (Greater London Council) noted these differences in facilities among parks in the London system:

The elements making up the existing park system consist of a set of physical components, which apart from the actual size of the park, include scenic and amenity aspects, sports provision, facilities for young children and special features such as zoos or bandstands. The size of the park, together with the amount and variety of facilities included, determines its function in the system.

-Greater London Council, 1968, 6.

In making this statement, the Council also asserted that differences in facilities imply functional differences among the parks in a system. Therefore, the use of urban parks may be expected to vary according to the "amount and variety of facilities included" in each park. In the present study, this source of variation was controlled by selecting functionally similar parks for detailed analysis in different neighborhood areas. Before making the selection, the particular items of equipment which would indicate functional similarities and differences among Ottawa parks had to be identified.

The Notion of an Urban Parks Hierarchy

A basic assumption underlying the administration of urban parks is the concept of a "hierarchy" of park types, from the more general recreational functions to the more specialized ones, from the local neighborhood park to parks serving much wider zones of influence. A careful examination of equipment differences among parks in the Ottawa system led the author to question the existence of such a functional hierarchy of park types; the corresponding assumption of a nested hierarchy of zones of influence is likewise open to question, but was not investigated as part of the present study. Terms used to designate the hypothetical service area hierarchy are familiar: "vest pocket" parks serving a purely local area of one or two city blocks; "neighborhood" parks serving perhaps a four to eight-block area; "community" parks for community areas with thousands, or even tens of thousands of population; "district" parks for entire sectors of a city, possibly serving hundreds of thousands of people; and finally "municipal" parks intended to serve all the residents of a city. A similar hierarchy exists for parks located outside urban areas. "Regional" parks are those which serve several municipalities in a metropolitan area. "Provincial" or "state" parks serve visitors from a number of different metropolitan areas. "National" and "international" parks are designed to attract visitors from entire countries, continents, or even the world as a whole.

Inventory of Ottawa Park Equipment

An inventory of park acreages and equipment was made available to the author by the Ottawa Department of Recreation and Parks. At that time (1970), the contiguous built-up area of Ottawa-Hull contained about 200 parks, of which 180 were under the jurisdiction of the City of Ottawa Department of Recreation and Parks. These municipal parks ranged in size from less than 1/10th of an acre to almost 100 acres, with over 90 percent between one and ten acres in size. Among the parks not included in the inventory were larger "regional" parks of the National Capital Commission. The inventory was already out of date in 1970, the date of its compilation being unknown, but certainly no more recent than 1968 or 1969. It contained information on only 67 of the 180 parks in the system. Despite these drawbacks, the inventory undoubtedly constituted the best single source available for the area's urban parks at the time, and the number of observations, 67, was sufficiently high to warrant the use of statistical methods of analysis.

The equipment data covered a large, but not complete range of park facilities. Wading pools, for example, were not included, being introduced into the parks after the inventory was drawn up. Trees and sand beaches, important amenities in the parks which had them, were not listed in the equipment inventory either. Some other information not directly dealing with the facilities of each park was also available: whether

the land was owned by the Department of Recreation and Parks or some other agency; the acreage of the park; the "district" in which the park was located; etc. Although this additional information did not constitute park equipment as such, it was also considered in the analysis, for whatever extra insight it might lend.

Altogether, the information available for the 67 parks of the Ottawa system covered a total of 36 different aspects of the parks and the kinds of equipment they contained. Unfortunately, much of the equipment was rare enough that its distribution in the system as a whole was anything but "normal". All the equipment and other "variables" were submitted to preliminary screening before any further analysis was undertaken. After this preliminary screening, some of the variables were eliminated completely, others were combined. For example, the number of swing sets for small children was not normally distributed, nor was the number of swing sets for older children, but when the two were combined, the total number of swings in a park turned out to be very close to normal in its distribution.

Some variables were considered more important than others by the author, and thus were retained even though their distributions were not normal and could not be normalized.

The variables retained after this preliminary screening are listed in Table 3. One half of the original variables were either combined or eliminated at this stage; 18 remained for further analysis.

TABLE 3

LIST OF PARK EQUIPMENT VARIABLES

Variable number	Description	Measure used
1	swings	no. of seats
2	sand box	no. of boxes
3	climber	no. of climbers
4	other play equipment (teeter-totter, senior combination apparatus, horizontal ladder, play house, play shelter, horseshoe pitch)	no. of pieces or sets
5	backstop for baseball	no. of backstops
6	basketball standards, volleyball posts	no. of pairs
7	other sports equipment: lacrosse box soccer goals football goals spectators' stand (other sports equipment values summed for each park)	1 if present 1 if present 1 if present 1 if present
8	portable building	no. of buildings
9	other buildings	no. of buildings
10	community center (field house, community building, canteen building)	1 if present
11	coal box, oil tank	1 if present
12	benches	no. of benches
13	picnic tables	no. of tables
14	parking facility	1 if present
15	bicycle rack	no. of racks
16	ownership: city, school board N.C.C., other Federal	1 0
17	location: central city west, south, east	1 0
18	park scale	square root of park acreage

These 18 park equipment variables were submitted to principal components analysis and to singular decomposition. (These procedures are discussed in Appendix I.) The seven dimensions of equipment provision identified by the principal components analysis appear in Table 4.

Principal Components of Equipment Provision

Of the seven "factors" in Table 4, some but not all were interpreted to indicate distinctive recreational functions. The first factor was termed "leisure", and was represented by high loadings of the variables: picnic tables, parking facility, benches, and large park scale. A second factor included conventional "playground" equipment: swings, sand boxes, and climbers. A third included the portable buildings and coal boxes for "winter use". The fifth factor was named the "teen-sports" factor on the assumption (and subsequently, the observation) that community buildings attracted teen-agers for social activities, and that therefore to call it simply a "sports" function would be inadequate and somewhat misleading.

The remaining three factors appeared to reflect dimensions of the equipment problem without direct relevance to the recreational functions of the parks. The parks located in the central part of the city, hence those which had been there a longer time, had a greater variety of equipment of all kinds (a "maturity" factor). "Bicycle access" as indicated by the presence of bicycle racks proved independent

TABLE 4

PRINCIPAL COMPONENTS OF PARKS EQUIPMENT (ROTATED)

Factor	Variables	Factor Loadings	Percent Expl.	Cumul. Percent
I. General Leisure	picnic tables	-.91	18%	18%
	parking facility	-.90		
	benches	-.84		
	park scale	-.75		
	other buildings	-.36		
	non-city ownership	-.32		
	. . .			
II. Playground	swings	.85	13%	31%
	sand box	.82		
	climber	.71		
	other buildings	.43		
	basketball, volleyball	.36		
	. . .			
III. Winter Use	portable building	-.90	10%	41%
	coal box, oil tank	-.90		
	. . .			
	other buildings	.37		
IV. Maturity	other play equipment	-.72	11%	52%
	other sports equipment	-.71		
	. . .			
	peripheral location	.77		
V. Teen-sports	baseball backstops	-.84	10%	62%
	community center	-.68		
	basketball, volleyball	-.56		
	park scale	-.44		
	. . .			
VI. Bicycle Access	bicycle rack	.87	8%	70%
	community center	.43		
	other play equipment	.36		
	. . .			
VII. City Ownership	other buildings	.54	7%	77%
	. . .			
	basketball, volleyball	-.46		
	non-city ownership	-.78		

of the maturity grouping in the factor analysis, but did not seem to be closely related to any other variables either; mere access to a park by bicycle did not, in the author's view, necessarily imply anything about the recreational functions which might exist inside the park. A tendency was noted for parks in "city ownership" to contain more buildings than parks built on leased land: presumably this would reflect the confidence of the parks administration that the land would remain in park use and, therefore, investments in major facilities such as buildings could be justified if the park department owned the land.

A further refinement of the principal components analysis was carried out by eliminating from consideration those variables which did not appear to be related to distinctive park functions. Thus, of the eighteen variables which survived preliminary screening, only a dozen were considered to indicate definite park functions. Of these 12 variables, two had to do with winter use of the parks. However, full information was not available on winter use facilities. The small amount of information which was available suggested that winter use was served without reference to ("independently of") the summer use functions of the same parks. Accordingly, since the remainder of the study dealt primarily with summer use of the Ottawa parks, the variables "portable buildings" and "coal box"

were also eliminated from further consideration.

The list of equipment variables thought to reflect service to distinctive summer use park functions was thus reduced to ten variables. The refined list of ten summer use variables was then resubmitted to principal components analysis in order to gain a new set of factor loadings. The desired result was obtained: this time only the three desired factors appeared, each with a higher proportion of explanation than previously of the variance in the correlation matrix. The total explanation of variance was 71 per cent. Each variable loaded well (at least .69) on

TABLE 5

FACTORS OF CORRELATION AMONG TEN SELECTED VARIABLES

Factor	Variables	Factor Loadings	Percent Expl.	Cumul. Percent
I. Leisure	picnic tables	-.94	30%	30%
	parking facility	-.88		
	benches	-.86		
	park scale	-.76		
	. . .			
II. Playground	swings	.84	21%	51%
	sand box	.80		
	climber	.76		
	basketball, volleyball	.36		
	park scale	-.23		
III. Teen-sports	baseball backstops	.81	20%	71%
	community center	.71		
	basketball, volleyball	.69		
	park scale	.42		
	swings	.25		
	. . .			

one of the three factors. Unnecessary "noise" from irrelevant variables was eliminated, so that a similarly powerful analysis was achieved with fewer than half the previous number of factors. The refined factors and the loadings of the ten variables on these factors appear in Table 5.

Factors from Singular Decomposition

Singular Decomposition of the same ten variables resulted in the identification of three closely similar "factors", accounting for 67% of the variance in the equipment data. The "loadings" produced by this method were somewhat different, however, as indicated in Table 6. Nevertheless, the similarity of results from two mathematically different procedures lends further support to the conclusion of three functional dimensions of equipment provision, named "leisure", "playground" and "teen/sports".

Park Functions

The results shown in Tables 5 and 6 constitute a remarkably close verification of the statement by the Greater London Council, considering the differences in culture, city size and geographic location between London and Ottawa. The "leisure" factor represents the "scenic and amenity aspects" of a park. The "teen/sports" factor includes the "sports provision"

TABLE 6

FACTORS IDENTIFIED BY SINGULAR DECOMPOSITION

Factor Name	Variables	Vector Loadings	Percent Explanation
Leisure	Picnic tables	0.69	33%
	Benches	0.62	
	Parking facility	0.61	
	Park scale	0.58	
Playground	Swings	0.63	22%
	Basketball and volleyball posts	0.54	
	Sand boxes	0.45	
	Climbers	0.42	
Teen/sports	Baseball backstops	0.582	12%
	Community center	0.513	
	Basketball and volleyball posts	0.35	
	. . .		
	Sand boxes	-0.52	

mentioned by the Council. The "playground" factor consists of "facilities for young children". Each factor in the principal components analysis includes the "park scale" as a constituent variable; the Council referred to "the actual size of the park". The only aspect not found in the Ottawa park equipment inventory was "special features such as zoos or bandstands"; such features are found to a limited extent (except for zoos) in parks of the National Capital Commission, and therefore do not appear in the city park inventory.

In short, the result of both analyses was emphatically to support the conclusion of the Greater London Council:

"The size of the park together with the amount and variety of facilities included determines its function in the system". Three specific functions have been identified for the Ottawa parks. The next task is to classify each park according to the kinds of recreational functions being served.

Types of Parks

Several different procedures were used for grouping parks into categories. The procedures were based on values of the original equipment variables, and on the factor scores of each park on the three functional dimensions of equipment provision.

Presence-or-Absence Criterion

"Types" of parks may be identified, in the first instance, on the basis of the presence or absence of variables which indicate a given recreational function. Eight of the ten variables can be separated into three groups each of which is associated with one of the three functions only. Swings, sand boxes and climbers indicate the playground function. Picnic tables, parking facilities and benches indicate the leisure function. Baseball backstops and community centers indicate the teen-sports function. Each of these eight variables is "diagnostic" of a certain park function.

The two remaining variables may be considered "transitional" ones among the various functions. Small park scale is negatively associated with the playground function, weakly but positively associated with the teen-sports function, and strongly associated with the leisure function.¹ The role of park scale reflects the functions involved. Only a small lot is required for children's play equipment. A somewhat larger lot size is necessary for a baseball field. A leisurely walk requires still a larger area. On the other hand, there is no hard and fast relationship between park scale and use functions. Children's play equipment can be, and often is, included as an additional amenity in the largest parks. Small "vest pocket" parks can be developed equally well for bench-sitting and dog-walking as for playground use. Not all sports require large lots, either. The role of park scale may perhaps be best understood as a "permissive" factor, one that permits certain kinds of activities to be developed, but that does not determine or restrict the use of an area. Claval wrote, "La nature permet, l'homme dispose" (1964, 50). In the present context one might observe, "L'échelle du parc permet, le service des parcs dispose".

Basketball and volleyball posts constitute the other transitional variable in that they were positively associated both with the playground and with the teen-sports functions. The comments regarding park scale apply to this variable, too.

¹Refer back to Table 5 for factor loadings of "park scale".

Basketball and volleyball are not space-consuming sports. Furthermore, the equipment required for them is inexpensive and easy to install or remove. An added dimension of activities can be provided in a small playground by installing this kind of equipment.

Using the presence-or-absence criterion, a park which contains one or more of the "diagnostic" kinds of equipment for one function, and none of the "diagnostic" equipment for any other function, is a pure example of the given functional type. The list of such pure types is presented in Table 7.

In addition to the parks with only one type of equipment provided, the table also includes a category of "undeveloped" parks. These are parks which, according to the inventory, had none of the diagnostic kinds of equipment at this time.

Thirty parks, of the 67 for which data were available, could be considered typical of a single functional class of parks using the presence-or-absence criterion.¹

The logical extension of the presence-or-absence method of classifying parks is to group the remaining 37

¹The case of Strathcona Park requires explanation. This is an attractive, tree-lined, leisure use park along the Rideau River. It was owned by the Department of Recreation and Parks, but had been landscaped and developed largely by the National Capital Commission, because of its

TABLE 7
TYPICAL PARKS

<u>Functional Category</u>	<u>Name of Park</u>
I. Leisure Parks	40. Linedenlea 47. Mooney's Bay
II. Playgrounds	2. Ainsley Drive 5. Alvin Heights. 9. Bel-Air 13. Bordeleau 17. Cambridge 24. Elmdale 36. Kilreen 41. Lions 43. McCann 51. Parkdale 52. Parkway 61. Tillbury
III. Teen/Sports Parks	7. Balena 11. Billings 20. Carlington 26. Frank Ryan 35. Kaladar 39. Lawson 49. Orlando 60. Strathcona 63. Weston
IV. Undeveloped Parks	18. Canterbury 21. Cecil Morrison 23. Copeland 25. Fairmont 34. Iona 53. Pauline Vanier 65. Woodroffe Ave. Site

parks in combined functional categories: leisure/playground; leisure/teen-sports; playground/teen-sports; and leisure/playground/teen-sports. The remaining parks are grouped in their appropriate categories in Table 8. The entire urban park system of Ottawa-Hull, showing the functions of those parks for which data were available according to the presence-or-absence criterion, is illustrated in Figure 7.

Factor Scores Criterion

With these lists of parks identified by functional type according to the presence-or-absence criterion as a reference, it is easier to interpret classifications based upon factor scores on each of the three functional factors, or summer use park "functions". Whereas the presence-or-absence criterion tells whether or not the function might exist (and presumably, does exist) in a given park, the factor scores criterion goes a step farther

proximity to the many foreign embassies in the area. Apparently, at the time the inventory was made, there was a baseball backstop in Strathcona Park owned by the Department of Recreation and Parks; otherwise, the equipment in the park had been provided by the N.C.C. Since the inventory showed only "sports" equipment in the park, it became classified as a typical sports park by the presence-or-absence criterion. By the time of the present study, the backstop, if it ever had existed, had been removed. The author visited each of the other 66 parks for which data had been provided, and this was the only one in which there was such a glaring discrepancy between inventory data and the actual equipment in the park.

TABLE 8

PARKS WITH COMBINED FUNCTIONS

V. General leisure-playground

- 28. Grange
- 46. Montgomery Memorial
- 67. York St.

VI. General leisure-teen/sports

- 16. Britannia
- 29. Green Island

VII. Playground-teen/sports

- 1. Agincourt
- 3. Alexander
- 4. Alta Vista
- 6. Anglesea Sq.
- 8. Beech St.
- 10. Bellevue
- 19. Carleton Hts.
- 27. Glebe Memorial
- 30. Hampton
- 31. Hawthorne
- 32. Heron
- 33. Hutton
- 37. Kingsmere
- 38. Laroche
- 42. Manor
- 44. McKellar
- 50. Overbrook
- 55. Ridgemont
- 56. Riverview
- 57. St. Lukes
- 62. Westboro Kiwanis
- 64. Windsor
- 66. Woodroffe

VIII. General leisure-playground-teen/sports

- 12. Bingham Sq.
- 14. Brantwood
- 15. Brewer
- 22. Champlain
- 45. McNabb
- 48. New Edinburgh
- 54. Plouffe
- 58. Sandy Hill
- 59. Strathcona Hts.

by indicating the degree to which the given function is emphasized in the park.

A useful point of departure for a factor scores classification is to consider those parks which exhibit the highest scores on each factor. These are presented in Table 9.

TABLE 9

PARKS WITH HIGHEST FACTOR SCORES ON THREE FUNCTIONAL FACTORS^a

Factor	Parks	Factor Scores
I. Leisure	16. Brittania	-5.9
	47. Mooney's Bay	-4.1
	15. Brewer	-1.5
II. Playground	50. Overbrook	1.5
	48. New Edinburgh	1.4
	64. Windsor	1.3
	55. Ridgemont	1.2
	54. Plouffe	1.1
III. Teen-sports	15. Brewer	3.9
	44. McKellar	1.5
	38. Laroche	1.3
	50. Overbrook	1.2

^aParks listed are those with factor scores greater than +1.0 or less than -1.0.

Do these scores make sense "geographically"? The parks listed in Table 9 include those in the system with relatively heavy endowments of equipment. The high scores of Brittania, Mooney's Bay and Brewer parks, the system's three largest areas, are to be expected on the leisure factor. Overbrook park scores highly on both the playground and the teen/sports factors. Although small in area, Overbrook was an intensively-used park offering a variety of equipment to a wide range of age-groups of users. Brewer park is the only other park to appear in two of the three lists of Table 9. It definitely deserves its place as the best-equipped sports park in the system. Most of the parks with high scores on the playground and teen/sports factors are listed in Table 8 as parks with combined functions. Although this result is logically consistent with having a high score on one of the functions, it does foreshadow difficulties to be outlined below. For the present, suffice it to say that the factor scores of these high-scoring parks do appear to reflect an underlying geographic reality.

One method of classification would be to proceed directly from the factor scores. The problem is to establish a cut-off limit or "threshold" below which a park is no longer considered to serve a given function to a significant degree. The scores are calculated in such a way that the average for all parks is zero, but since the parks are not normally distributed on any of the factors, the zero level is not

functionally relevant. The presence-or-absence classification can be used to determine cut-off levels which are relevant for each function. In considering the list of factor scores in descending order, one eventually reaches a park which does not have the functional type of equipment present at all. This would seem to be a reasonable cut-off limit for parks in that category, even though other parks having some of the given type of equipment present may also appear farther down the list. A factor scores classification of parks using this kind of cut-off limit is presented in Table 10.

The classification by factor scores, using threshold values, includes 51 of the 67 parks under consideration. Of the remainder, 7 are "undeveloped" by the presence-or-absence criterion, but 9 others are simply different enough from the high-scoring parks to resist classification. The full list of unclassified parks appears in Table 11.

The example of Strathcona Park, explained above, is one of those left out of the factor scores classification. This would seem to be a desirable exclusion. Balena and Billings parks were also listed on the inventory as empty except for a backstop. Green Island had a backstop and two benches, but its real function has been to serve as the site of Ottawa's new City Hall. Kaladar Park had two back-

TABLE 10
PARKS WITH HIGHER THAN THRESHHOLD SCORES
ON THREE FUNCTIONAL FACTORS

<u>Leisure Parks</u>	<u>(Score)</u>	<u>Playgrounds</u>	<u>(Score)</u>	<u>Teen/Sports Parks</u>	<u>(Score)</u>
16 Brittania	-5.9	+50 Overbrook	1.5	*+15 Brewer	3.9
47 Mooney's Bay	-4.1	*48 New Edinburgh	1.4	+44 McKellar	1.5
+*15 Brewer	-1.4	+64 Windsor	1.3	+38 Laroche	1.3
*48 New Edinburgh	-0.8	55 Ridgemont	1.2	+50 Overbrook	1.2
*59 Strathcona Hts.	-0.4	54 Plouffe	1.1	+32 Heron	0.9
(non-leisure park next)		2 Ainsley Dr.	0.9	20 Carlington	0.9
		+42 Manor	0.9	+64 Windsor	0.8
		+30 Hampton	0.7	+66 Woodroffe	0.8
		1 Agincourt	0.7	+30 Hampton	0.7
		13 Bordeleau	0.7	+ 3 Alexander	0.7
		+ 3 Alexander	0.7	+14 Brantwood	0.7
		+44 McKellar	0.7	+42 Manor	0.5
		9 Bel-Air	0.6	26 Frank Ryan	0.4
		5 Alvin Hts.	0.6	(non-teen/sports park next)	
		4 Alta Vista	0.6		
		19 Carleton Hts.	0.6		
		37 Kingsmere	0.6		
		+32 Heron	0.6		
		56 Riverview	0.6		
		41 Lions	0.6		
		62 Westboro Kiwanis	0.6		
		10 Bellevue	0.5		
		27 Glebe Memorial	0.5		
		51 Parkdale	0.4		
		58 Sandy Hill	0.4		
		22 Champlain	0.3		
		12 Bingham Sq.	0.3		
		8 Beech St.	0.2		
		52 Parkway	0.2		
		+59 Strathcona Hts.	0.1		
		67 York St.	0.1		
		57 St. Lukes	0.1		
		43 McCann	0.0		
		17 Cambridge	0.0		
		+38 Laroche	0.0		
		+14 Brantwood	-0.1		
		36 Kilreen	-0.1		
		33 Hutton	-0.1		
		45 McNabb	-0.1		
		61 Tillbury	-0.4		
		6 Anglesea Sq.	-0.4		
		28 Grange	-0.4		
*Both Leisure park and playground		+*15 Brewer	-0.4		
+Both playground and teen/sports park		31 Hawthorne	-0.5		
		(non-playground next)			

TABLE 11

PARKS BELOW THRESHOLD SCORES ON ALL THREE FACTORS

Parks	Factor Scores		
	Leisure	Playground	Teen/sports
(minimum acceptable score)	(-0.4)	(-0.5)	(+0.4)
<u>Undeveloped parks</u>			
18 Canterbury	+0.1	-1.1	-0.1
21 Cecil Morrison	+0.3	-0.8	-0.7
23 Copeland	+0.2	-1.0	-0.3
25 Fairmont	+0.3	-0.9	-0.5
34 Iona	+0.3	-0.8	-0.7
53 Pauline Vanier	+0.3	-0.9	-0.5
65 Woodroffe Avenue Site	+0.2	-1.0	-0.3
<u>Others</u>			
7 Balena	+0.3	-0.9	-0.3
11 Billings	+0.3	-0.9	-0.2
29 Green Island	+0.2	-0.9	-0.3
35 Kaladar	+0.4	-0.8	-0.3
39 Lawson	+0.3	-0.8	-0.4
40 Lindenlea	+0.2	-0.8	-0.7
60 Strathcona	+0.1	-1.2	+0.2
63 Weston	+0.2	-1.0	-0.1

stops; Lawson only one; neither had any other equipment. Lindenlea had only three benches on its two-acre lot. Weston Park was another one with only a backstop. In general, it would appear that all of the parks excluded from classification by the factor scores criterion were lightly-equipped, and a few were unusual in other ways as well.

A semblance of hierarchic structure may be found in the list of parks classified by the factor scores criterion.

The leisure parks are the least numerous, and three of the five exhibit multiple functions. The teen-sports parks are somewhat more numerous, and nearly all of them combine the playground with the teen-sports function. The playgrounds are the most numerous, and relatively few of them also meet the criteria for more than this one function.

Unfortunately, though the hierarchic structure seems to exist for the factor scores classification, the classification itself does not meet the requirements of a true typology. The most obvious problem is the overlapping membership for many individual parks. If the parks were classified into the same eight mutually exclusive categories as those established for the presence-or-absence criterion, the hierarchic structure would disappear.

The factor scores of the parks remain a step more refined than the classification using the presence-or-absence criterion. If it is desired, as is the case for the present study, to predict the use of a park according to its functional characteristics, then one could use the factor score of the park on a given function to predict the use of the park for that function. This is as far as the matter need go for the immediate purpose of this study.

There is, however, a more general interest to be served by carrying the analysis of park types further. The question of whether or not a functional hierarchy exists has not yet

been answered. Perhaps still more important, in the long run, is the relevance of park typology in the design and execution of systemwide park use surveys. Such surveys have as an essential prerequisite, the stratification of parks into types, so that use of the parks can be sampled in an orderly fashion, and so that the results may be applied in a general way, either to other existing parks of a given type, or to proposed new facilities of that type.

Classification by Linkage Analysis

The method of linkage analysis, and subsequent methods to be discussed below, meet strict criteria for "numerical taxonomy" or systematic classification, in that within-group differences are minimized while between-group differences are maximized. A number of methods are available for these purposes (Johnston, 1968).

Fourteen different groups of parks were identified by linkage analysis. These are listed in Table 12. One conclusion that may immediately be drawn from the linkage group classification is that the presence-or-absence criterion had resulted in lumping together parks with quite different characteristics. Those parks having the "leisure" function present have become subdivided into linkage groups IV and VIII. The parks with some playground equipment and neither of the other kinds of equipment in them

TABLE 12
RESULTS OF LINKAGE ANALYSIS OF
OTTAWA PARKS

Group No.	Park No.	Park Name	Group No.	Park No.	Park Name
I.	1.	Agincourt	VII.	6.	Anglesea Square
	19.	Carleton Hts.		45.	McNabb
	56.	Riverview		31.	Hawthorne
	27.	Glebe Memorial	VIII.	16.	Britannia
	55.	Ridgemont		47.	Mooney's Bay
	48.	New Edinburgh			
II.	39.	Lawson	IX.	30.	Hampton
	49.	Orlando		64.	Windsor
	26.	Frank Ryan		32.	Heron
	7.	Balena		42.	Manor
	29.	Green Island		14.	Brantwood
	11.	Billings		58.	Sandy Hill
	63.	Weston		37.	Kingsmere
	20.	Carlington		38.	Laroche
	60.	Strathcona		50.	Overbrook
	15.	Brewer		44.	McKellar
	35.	Kaladar		2.	Ainsley Drive
III.	13.	Bordeleau		61.	Tillbury
	9.	Bel-Air		51.	Parkdale
	5.	Alvin Heights	X.	52.	Parkway
IV.	65.	Woodroffe Ave.		36.	Kilreen
	53.	Pauline Vanier		17.	Cambridge
	25.	Fairmont	XI.	24.	Elmdale
	34.	Iona		41.	Lions
	23.	Copeland	XII.	46.	Montgomery Mem.
	18.	Canterbury		67.	York Street
	21.	Cecil Morrison		43.	McCann
	40.	Lindenlea			
V.	4.	Alta Vista	XIII.	3.	Alexander
	62.	Westboro Kiwanis		66.	Woodroffe
	54.	Plouffe		57.	St. Lukes
VI.	22.	Champlain	XIV.	28.	Grange
	10.	Bellevue		59.	Strathcona Hts.
	12.	Bingham Sq.			
	8.	Beech Street			
	33.	Hutton			

were apportioned among linkage groups III, IX, X, XI, and XII. Only those parks previously identified as "typical" teen-sports parks remained intact in linkage group II.

The next conclusion one would wish to draw from the linkage analysis would be to "qualify" the linkage groups according to the apparently dominant or common recreational function which would constitute the "prototype" of each group. Unfortunately, of the 14 linkage groups, only 4 were entirely subsumed under one of the previously established functional classes. In two of the linkage groups there were members from 3 out of the 4 original functional classes. Thus, it would appear that not only did the presence-or-absence criterion group unlike individuals into the same categories, but also, what is worse, by combining the individuals together into linkage groups, one ends up with groups that seem not to be differentiated on the basis of recreational functions.

A problem with both the presence-or-absence classes and the linkage groups was that both were unnecessarily complex. The lack of correspondence between the two classification systems was overcome, to a large extent, by combining or "collapsing" categories. The results of this exercise are presented in Table 13. The correspondence between the two classification systems is intuitively obvious at this level of generalization, and has also been verified by a Chi-square test to be "significant" at better than the .0001 level.

TABLE 13

COMPARISON OF COMBINED PRESENCE-OR-ABSENCE
CLASSES WITH COMBINED LINKAGE GROUPS
(IN FREQUENCIES OF MEMBERSHIP)

Presence-or-Absence Classes	Linkage Groups		
	II, IV, VIII	III, X, XI, XII, XIV	I, V, VI, VII, IX, XIII
I, III, IV, VI	20	0	0
II, V	0	12	3
VII, VIII	1	1	30

$$\chi^2 = 107, \text{ D.F.} = 4$$

The numbers in Table 13 refer to individual parks. For example, of the 21 parks in linkage groups II, IV or VIII, 20 were also in presence-or-absence classes I, III, IV or VI. The combined groupings were arrived at by trial and error.

The functional characteristics of the combined groups would be as follows. Functional "presence-or-absence" classes I, III, IV and VI include typical leisure parks, typical sports parks, undeveloped parks, and the combined leisure/teen-sports category. This would appear to suggest large-scale, open spaces catering to users older than the playground set.

Functional classes II and V by the presence-or-absence criterion both have playground equipment, the latter also serving the leisure function. These would probably be small playground areas catering primarily to young children, with or without benches for their supervisors to sit on.

Presence-or-absence classes VII and VIII are the two complex categories which include both the playground and

the teen-sports functions. The latter also includes the leisure dimension. This class would perhaps include intermediate size parks serving a mixture of age groups interested primarily in sports activities.

Of course, it would be preferable to arrive at a simplified typology of parks without arbitrarily imposing the presence-or-absence criterion, but by following through more completely the logic of mathematical procedures for reducing within-group variance and increasing differences between groups. One such procedure is "discriminant analysis" (see Fisher, 1936).

This form of analysis was useful at this stage of the study, because of the need to transform the linkage groups in a way that would make them correspond better to the functional dimensions which had been identified. The discriminant analysis made direct use of the factor scores of each park on each functional factor as the basis for "rearranging" the 14 linkage groups. This proved to be a major task, as it required six iterations of discriminant analysis in order to arrive at stable groups. The results of the discriminant analysis at the sixth iteration are presented in Table 14.

One may question whether, after six iterations, the groups are not so far removed from their original compositions as to render this result meaningless. The answer to

TABLE 14

RESULTS OF DISCRIMINANT ANALYSIS ON
FOURTEEN LINKAGE GROUPS
(after six iterations)

		Group No.													
	Park No.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV
		48	60	5	40	54	59	31	47	15	45	62	43	66	28
			20	9	21	55	52	6	16		36	4	67	3	
			26	13	18	50	8	61			57	56	46	44	
				27	23	42	12				33	19	17	38	
					34	64	22					1		14	
					25							41		32	
					53							24		30	
					65							51			
					63							2			
					35							37			
					11							58			
					29							10			
					7										
					49										
					39										

this question depends on whether the discriminant analysis has brought the groups any closer to the original presence-or-absence categories. The typical playgrounds of the original classification are diffused among groups 3, 6, 7, 10, 11, and 12 of Table 14. Therefore, it appears that the discriminant analysis has not brought the groups any closer to the original categories. The two classifications can again be made to coincide, by combining them into the same three general categories: leisure/sports/ undeveloped parks; playgrounds; and complex playground/teen-sports parks. This leads to a congruence of the two classification systems which is somewhat less complete than that achieved for the original linkage groups.

Neither the original 14 linkage groups, nor the 14 groups established by discriminant analysis had the kind of clear functional identities that would be necessary for them to serve as a basis for a meaningful typology of parks. The next attempt was to arrive at a smaller, presumably more manageable number of groups by similar procedures.

A factor analysis was carried out on the transposed data matrix. The results showed that there were seven "factors", or dimensions of group structure, among the 67 parks, which accounted for a remarkable 95 per cent of variance in the correlation matrix. This seemed to suggest that there would be 7 distinct park types. Seven groups were established on the basis of the "factor loadings" of each park on each of the "factors". The seven groups were then submitted to discriminant analysis. The groups proved unstable through six iterations and so the experiment was abandoned.

Classification by Congroup

It was tempting to assert, at this point, that there was no clearly defined order in the data, that the task of typology continually yielded results which did not fit the criteria of hierarchic structure, that even the typologies themselves were difficult to arrive at since they were based on innately unstable groups. However, a further

classification method remained to be attempted. Analysis by the "congroup" method is more flexible than either linkage or discriminant analysis, because it produces an optimal grouping for any desired number of groups, based directly on the original factor scores of individual parks. (See Appendix I.)

The congrouping of the 67 parks required numerous steps: a total of 66 steps. Ignoring the early stages, before most of the parks had been entered into groups, there are many possible steps at which the process might have been halted. At step 30, 15 groups were formed, and the number never exceeded 15. However, this is even a larger number than the number of linkage groups. This shows, among other things, that the large number of groups created by the linkage analysis was not accidental, but rather reflected realistically the true complexity of the park classification problem.

The classification into 15 groups remained stable, as new members continued to be added to the groups down to step 46 of the congroup procedure. Step 46 contains a maximum of "information" in groups, without the groups themselves being collapsed into a smaller number of larger groups. Unfortunately, 6 parks were still left out of groups at step 46. Considering each of these individuals as a one-member group, the total number of groups at this stage was an unwieldy 21 groups.

In the following steps, the last remaining individuals were gradually added to existing groups, while the number of groups decreased, down to 5 groups at step 59. At this point, 3 isolated parks remained in addition to the 5 groups. Two of the individuals formed a sixth group at step 60. Two of the other groups combined at step 61, leaving a total of five groups again. Finally, at step 62, the last park, Brewer Park, entered into a group. The composition of the 5 groups at step 62 is shown in Table 15.

TABLE 15

CONGROUPS OF PARKS (STEP 62)

<u>Group No.</u>	<u>Park Nos.</u>
I	1,13,9,19,30,32,3,44,4,5,37,10,62,41,56,27,2,42
II	6,61,28,31,7,11,29,25,49,53,40,23,65,63,21,34,35, 39,18,20,26,60
III	8,52,67,17,38,43,57,14,36,45,33,59,12,22,24,58,46, 66,51,15 (Brewer)
IV	16,47
V	48,50,54,55,64

These five groups having been established, they were subsequently combined into four, three, two and finally one all-encompassing group. The sequence of combinations of groups is illustrated in Figure 6.

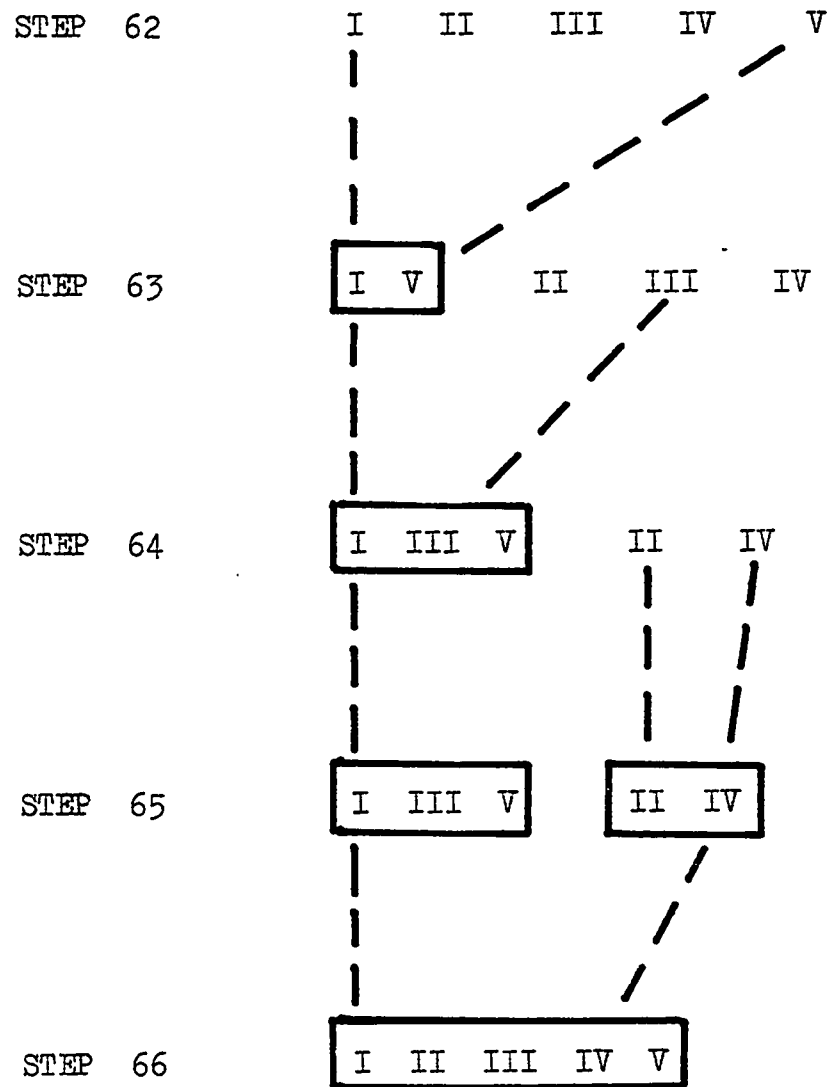


Fig. 6. Sequence of Final CONGROUP Combinations.
Group numbers are taken from Table 15.

Referring back once again to the presence-or-absence groups, one may observe that the typical playgrounds are divided evenly between Congroups I and III of Table 15. Typical teen-sports parks and the undeveloped parks are all included in Congroup II. Congroup V includes a small group of closely similar parks with complex functions, while the remainder of the "complex" parks fit into Congroups I and III. Since Congroup V is functionally similar to Congroup I, there would appear to be no loss of interpretive power in combining Congroup V with Congroup I as in step 63 of Figure 6. Furthermore, since parks of the various functional classes "playground", "playground/teen-sports", and "leisure/playground/teen-sports" are themselves evenly divided between Congroups I and III, one might as well proceed to accept the result of step 64, in which Congroup III is combined with Congroups I and V. A lot of detailed "information" about differences among parks has been lost by the time one reaches step 64. However, if up to that point, the groups lack a clear functional identity, there is no real advantage to having more information if it cannot be interpreted in a geographically meaningful way.

The categories remaining at step 64 of the congroup analysis are indeed very general, particularly considering that Congroup IV consists of only two parks. These two, Mooney's Bay and Brittania, are very large, landscaped,

shoreline parks, quite unlike any others in the system. Pollution in the rivers has interrupted use of these remarkable parks in recent years; in the past they would have been considered at the apex of any hierarchic structure of Ottawa city park functions.

The only other park in the city system comparable in scale to Mooney's Bay and Britannia was Brewer Park. It is interesting and entirely appropriate that Brewer Park should be classed with the playground-type parks of the system, rather than as a large leisure use area comparable to the other two giants. Although located along a shoreline, Brewer Park had no developed beach area along the shore of the Rideau River; it had fewer trees than the other two large parks, containing instead an abundance of sports fields and playground equipment. An artificial pond and beach area was created away from the river shoreline in Brewer Park, but it also had to be closed, in 1971, because of pollution.

The remaining distinction of step 64 was between Congroup II and the rest of the parks. Members of this group lacked playground equipment of any kind, and also lacked leisure equipment. Some sports equipment was provided in a few of the parks in this group. Otherwise they were empty "open spaces": essentially undeveloped parks.

The congroup procedure has thus led to the apparent conclusion that most of the parks in the system are "playgrounds" of one form or another. The major exceptions to this rule are the two large, distinctively leisure use parks (at least in the pre-pollution era), and the relatively undeveloped "open space" areas lacking standard playground facilities. Of these three groups, the playgrounds are by far the most numerous, open spaces intermediate, and leisure parks the most rare.

Ambiguity of the Notion of an Urban Parks Hierarchy

The conventional notion of a hierarchy is that levels exist with more specialized functions being provided in fewer establishments as one progresses upward through the hierarchic structure. Furthermore, it might be imagined in the context of an urban parks hierarchy, that the most specialized parks atop the hierarchy would also be the largest in scale, while the most general functions would be provided everywhere in small parks. There is clear statistical evidence that, among Ottawa parks, the top of a functional hierarchy exists, or at least used to exist, in the examples of Britannia, Mooney's Bay, and perhaps Brewer Park.

Although the two most specialized parks are leisure use parks, some form of "leisure" activity is provided for in many other parks, including some of the smallest in the Ottawa system. In defining hierarchic structure, it would be necessary to specify the precise kind of leisure function afforded by these two particular parks, i.e., the shoreline beach and swimming use, as constituting the specialized function available only in these parks.

The past several years have witnessed the development of small wading pools in parks throughout the city. Swimming as an activity is now served, to this limited degree, in every locality, although the quality of the activity is quite different from going to the beach of a large shoreline park. The closing of shoreline parks to swimming use because of water pollution, has constituted a recreational crisis striking at the very heart of the city park system, precisely because it has affected the topmost parks of the "hierarchy" of functional park types.

The simplest, apparently most realistic classification which resulted from congroup analysis was the dichotomy between lightly developed open spaces on one hand, and playgrounds of various kinds on the other hand. Since there were fewer open spaces than playgrounds, by the usual canons of hierarchic structure, one would conclude that the open space areas constitute a more specialized, higher-order function. This may be far from the truth, however. At

least some of these "open spaces" were in fact new park lands which simply had not been provided with any equipment yet by the time of the inventory; the addition of more equipment would turn them into playgrounds. No doubt the highest order park in the system, except for the shoreline beach areas, was Brewer Park; yet it was classed with the playgrounds rather than with the open space areas by the congroup procedure.

The hierarchy of functions is clear, even though the identification of hierarchic structure within the park system remains unresolved. The particular leisure functions of large, shoreline beach parks are of greatest rarity and highest hierarchic position. The two parks of this type were developed not only for swimming but for picnicking as well. Thus visitors could stay a whole day in these parks if they wished. Brewer Park, the third among the system's largest parks, was also provided with picnic tables, and all three were served by automobile parking facilities. Leisure functions in most other parks were indicated by the presence of park benches. Even the simple leisure activity of sitting on a park bench could also be considered of superior hierarchic position, because of the relative scarcity of park benches in the system.

Of the other two functions, teen-sports activities were served in a somewhat smaller number of parks than were

playground activities. There was also a tendency for sports equipment to be concentrated in parks of larger scale, whereas playground equipment was more closely associated with smaller scale parks. For these reasons the teen-sports function could be said to occupy a higher position in the hierarchy of functions than the playground function.

The hierarchy of functions correlates well with the ages of park visitors. Leisure uses are commonly sought by adults, sports activities by younger adults and teen-agers, playground activities by younger children. Thus there is a very strong bias in the provision of park services. The rarest function (leisure) is that engaged in by the most numerous segment of the population: those above teen-age.

The grouping of parks into functionally meaningful categories has been attempted repeatedly in the foregoing analysis. No single method has yielded a classification which meets both the criteria for a rigorous typology and the criteria for hierarchic structure at the same time. The presence-or-absence criterion led to a logically complete typology, which lacked hierarchic structure. The factor scores classification was hierarchically ordered, but the classes were not "types" since the categories were not mutually exclusive. None of the remaining classifications, by linkage analysis, discriminant analysis, or congroup analysis, yielded hierarchies.

In this chapter, then, a basis has been developed for what could constitute a functional hierarchy of urban parks,

but among the parks of the Ottawa Department of Recreation and Parks for which information was available, such a hierarchy did not appear to exist in fact.

Perhaps some research should be undertaken to investigate possible ways of establishing a more orderly hierarchy of park services on the basis of the recreational functions of parks. Meanwhile, great caution must be observed in the selection of "sample parks" which might be assumed to "represent" other parks of a given "type" in a city system: the data suggest multi-dimensional gradations of park facilities rather than distinctive park types.

Selection of Parks

The parks finally selected for investigation in this study were Agincourt, Anglesea Square, Hawthorne and McNabb Parks. Each park was centrally located in one of the four neighborhood areas which had been selected primarily on the basis of social characteristics.

By most criteria the four parks were functionally the same, and they were similar by whatever criterion one might choose. They were all classed as "playgrounds" by the factor scores criterion. They all had both playground and sports equipment, although McNabb had three benches and was therefore also a "leisure" park by the presence-or-absence criterion. The actual presence of a leisure function

in McNabb Park was later verified by the author, who conducted interviews with one older couple walking for pleasure and one family having a picnic. However, although equipment was lacking, the other parks also experienced some uses that could be classified as "leisure" rather than playground or sports activities. (See Chapter V.)

In conclusion, the analysis of park equipment differences led the author to rely on the presence or absence of particular kinds of equipment, as identified either by original variables or by factor scores on functional dimensions of equipment provision, as a basis for classification. No satisfactory typology of parks according to their functions was arrived at. Within the limits of these empirical results, the parks selected were indeed functionally similar. In the absence of a satisfactory typology it could not be asserted that they were or were not members of the same functional park "type".

Conclusion to Part A

In the foregoing chapters, the subject of study has been introduced progressively, from the original statement of the research problem; to the guidance provided by contemporary literature related to this problem; to the study region of the Ottawa-Hull metropolitan area and the selection within this area of representative communities; and

finally to the selection of four particular parks in which to focus a detailed analysis of urban parks use. In the following chapters, the use of these four parks will be described and analyzed, first with respect to the effect of distance on park visit frequencies, then taking into account a wide range of social characteristics which seemed likely to have some bearing on local parks use.

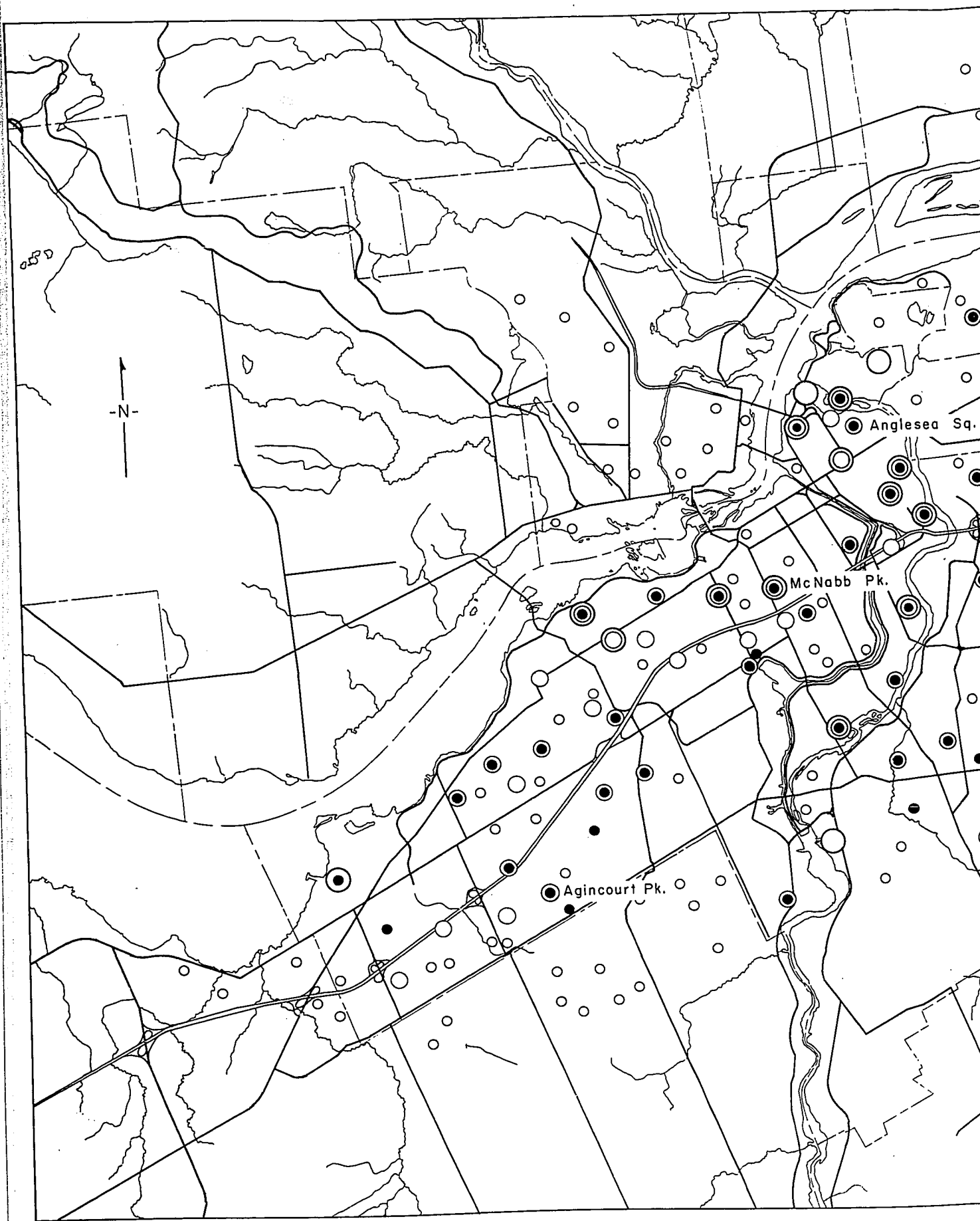
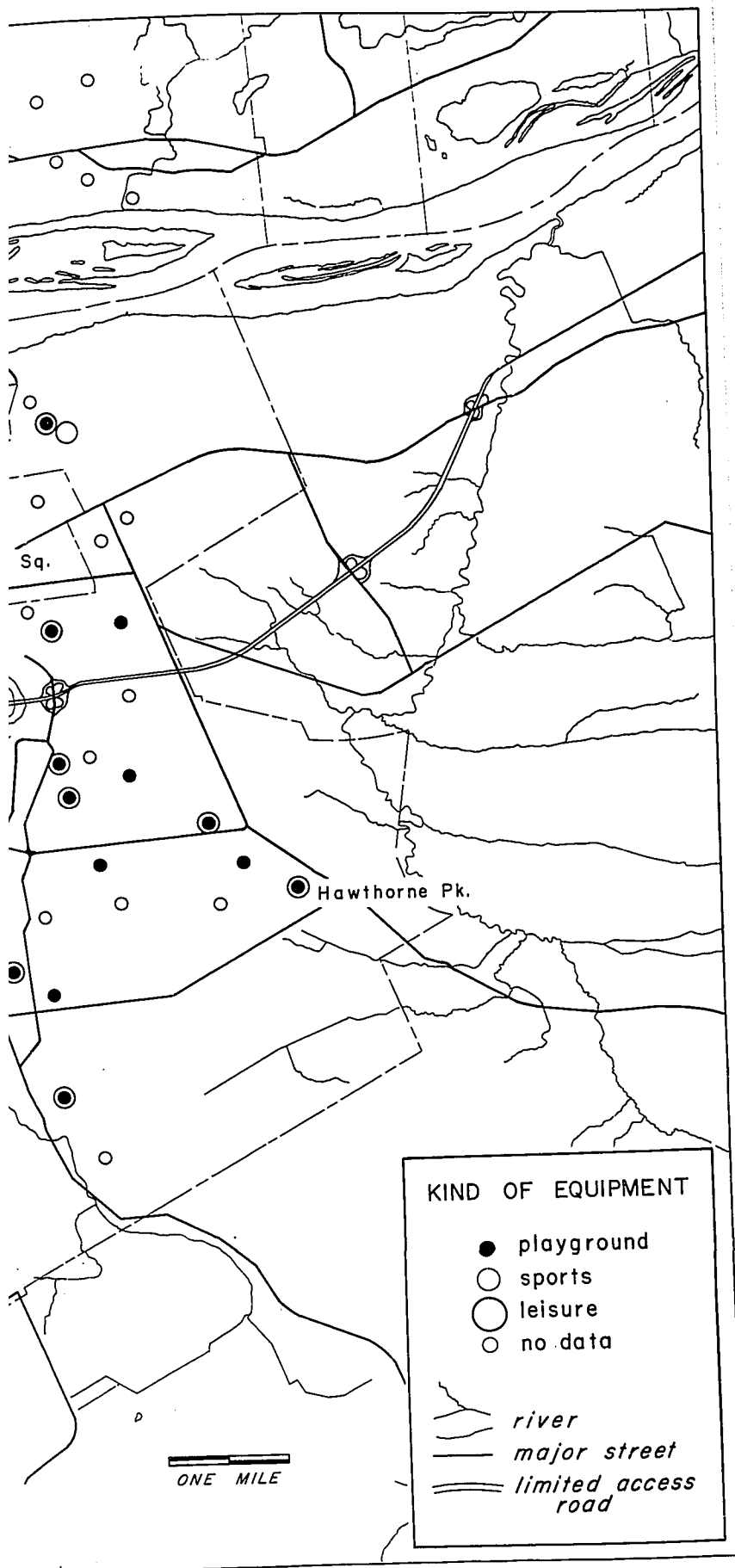


Fig. 7

The Park System
of Ottawa-Hull

PART B

THE USE OF PARKS IN FOUR SMALL AREAS

CHAPTER V

THE USE OF FOUR PARKS

The term "playground" is occasionally used as if it were synonymous with the term "urban park". Hours of on-site observation in various parks have convinced the author that such an interpretation does not do justice to the range of activities which are accommodated in even the most lightly developed urban park. The four Ottawa parks selected for detailed study illustrate this. They all contained facilities basically designed for playground and sports use, but the observed use patterns were complex.

The quantities of various kinds of use, on the other hand, appear to reflect the facilities provided in an urban park. Playground and sports use were the dominant activities in the four selected parks. Other kinds of activities occurred during odd times of day and in low frequencies. The possible relationship between facilities provision and use patterns is considered in the concluding portion of this study. The allocation of facilities and other park resources is of central concern in the planning and management of an urban park system.

However, the four parks under investigation in the present study were purposely chosen to have similar

facilities, and therefore the differences in use from park to park are taken to be the result of other factors. The present chapter is devoted to the use patterns in these four parks, to describing the similarities and differences in use from one park to the other. The use of a park is taken to include both the number of visitors in the park at a given time, and qualitative differences in the way the visitors make use of the park resource.

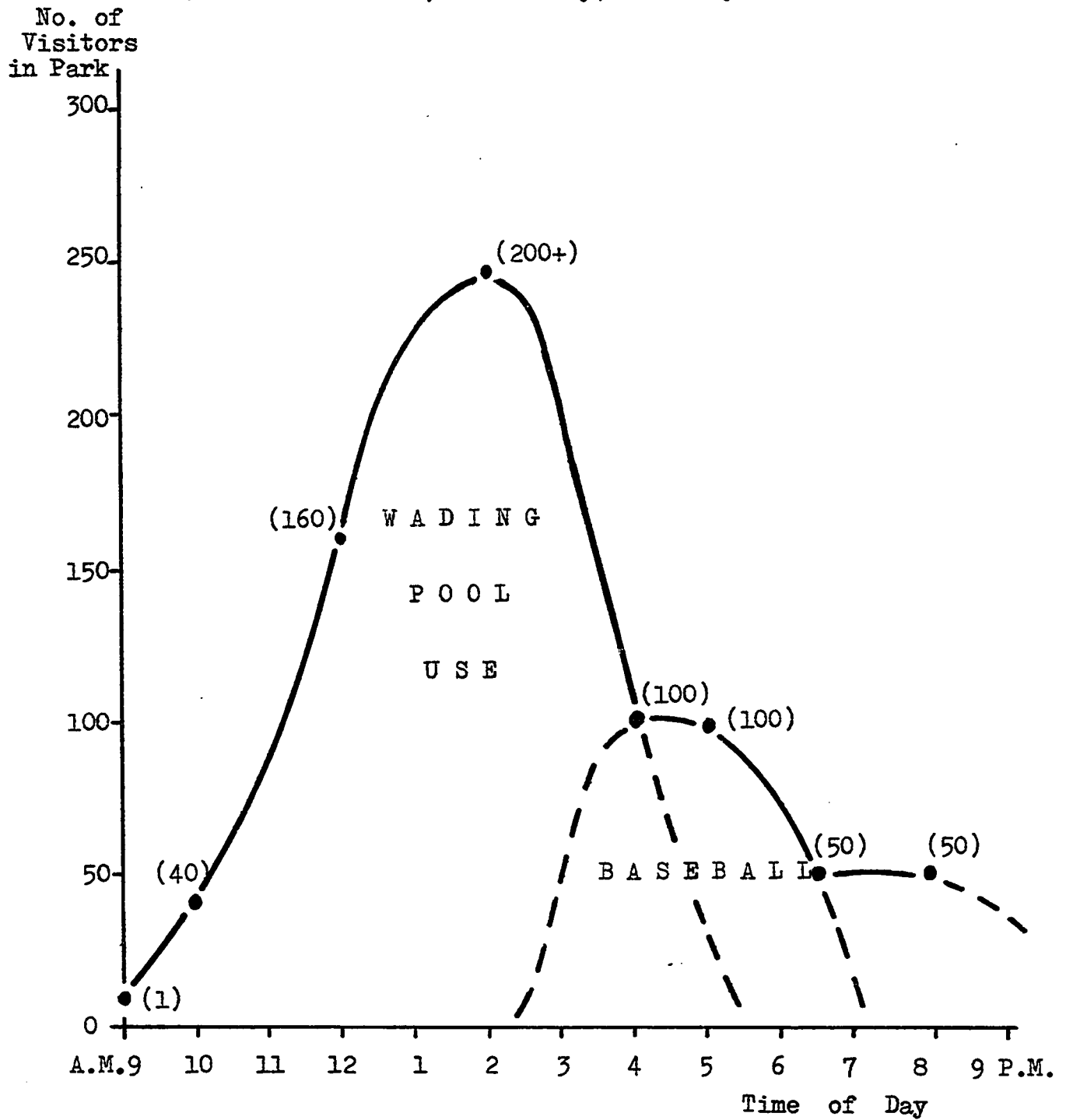
Interviews were conducted in each of the four selected parks on two different days, a Wednesday and a Saturday. Because of limited resources, the interviews took place in successive weeks rather than simultaneously in each park. A method of sampling park visitors in a representative way was developed for this study. The method and other details of the visitor survey are described in Appendix II.

Numbers of Park Visitors

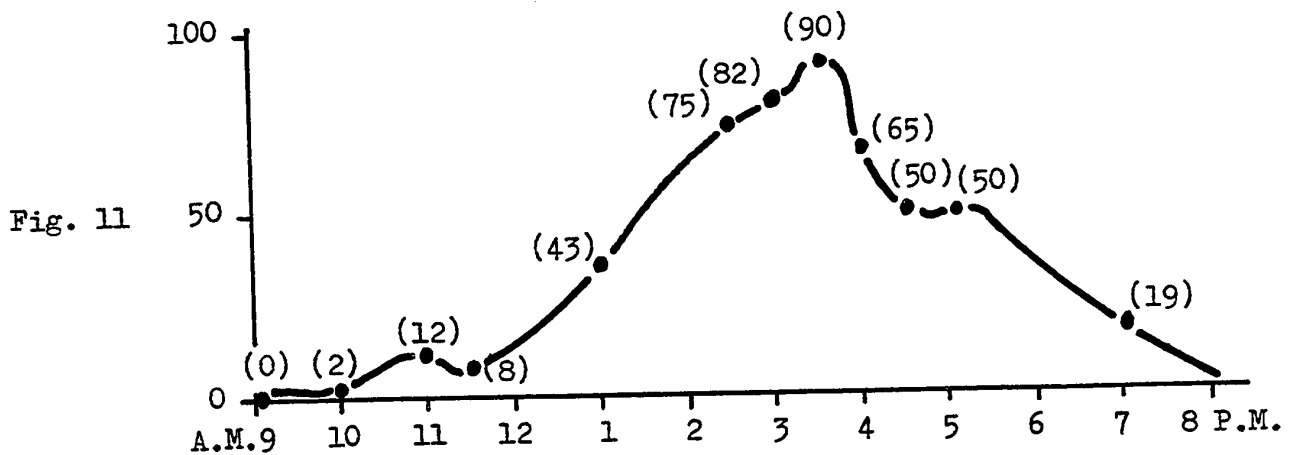
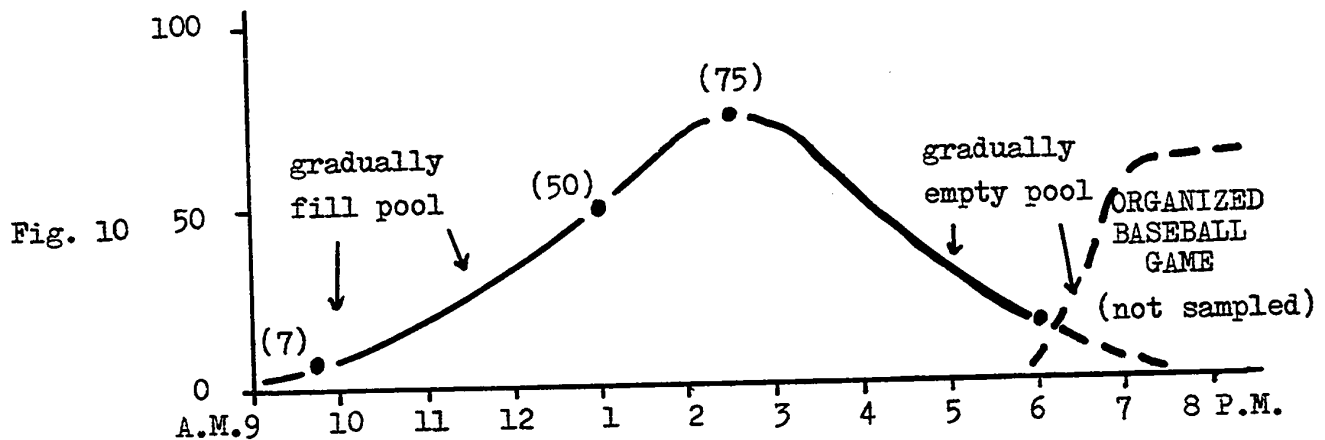
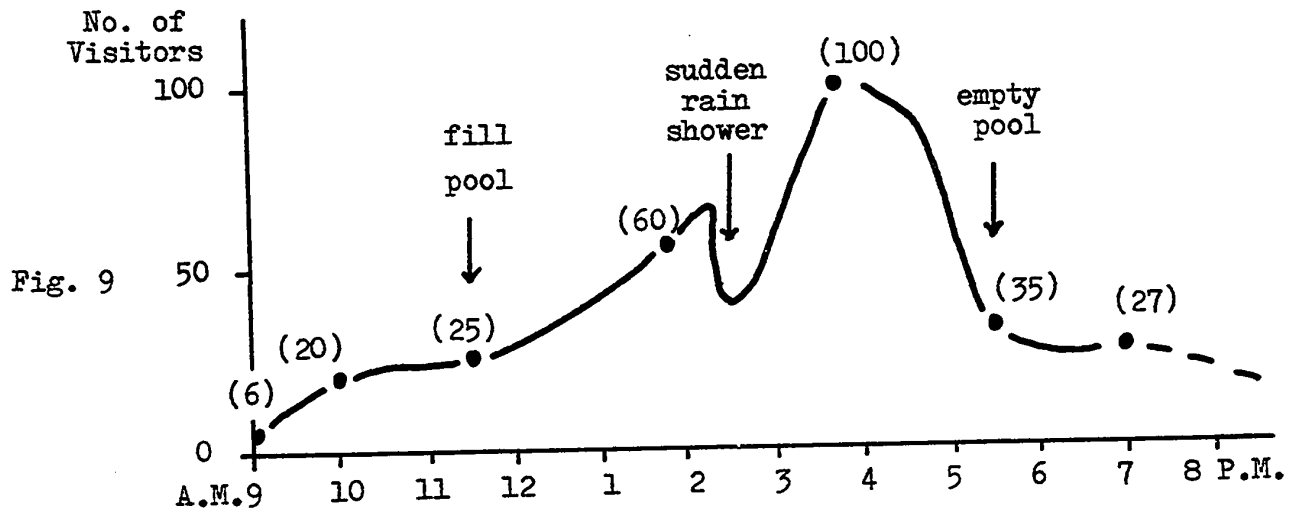
There are various measures which can be used to indicate the quantity of use of a park. One measure is the actual number of users in a park over time. Figures 8 through 14 illustrate the use of each selected park on each interview day, as indicated by the number of users in the park over time. Reasons for fluctuations in use are noted on the diagrams insofar as the author was aware of them.

Fig. 8

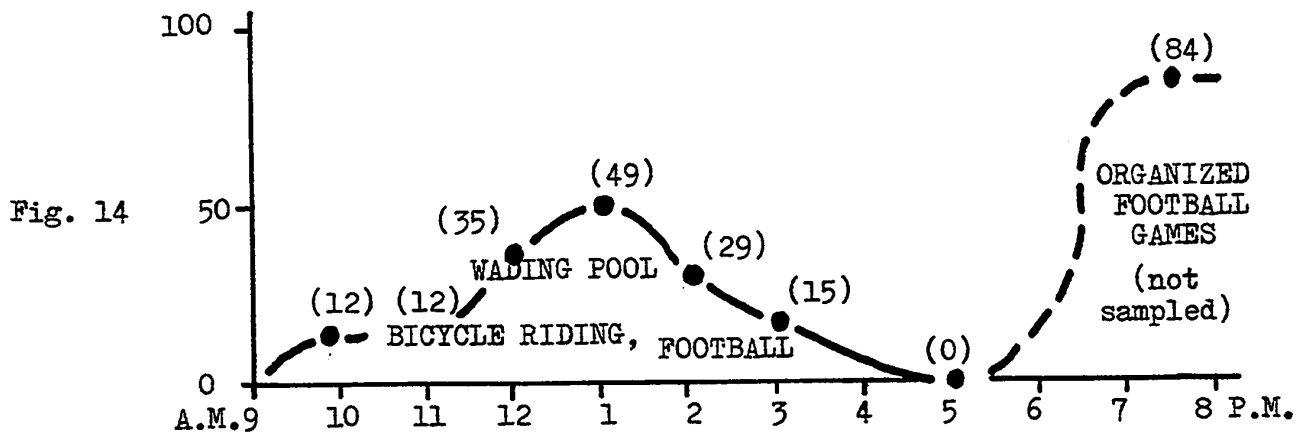
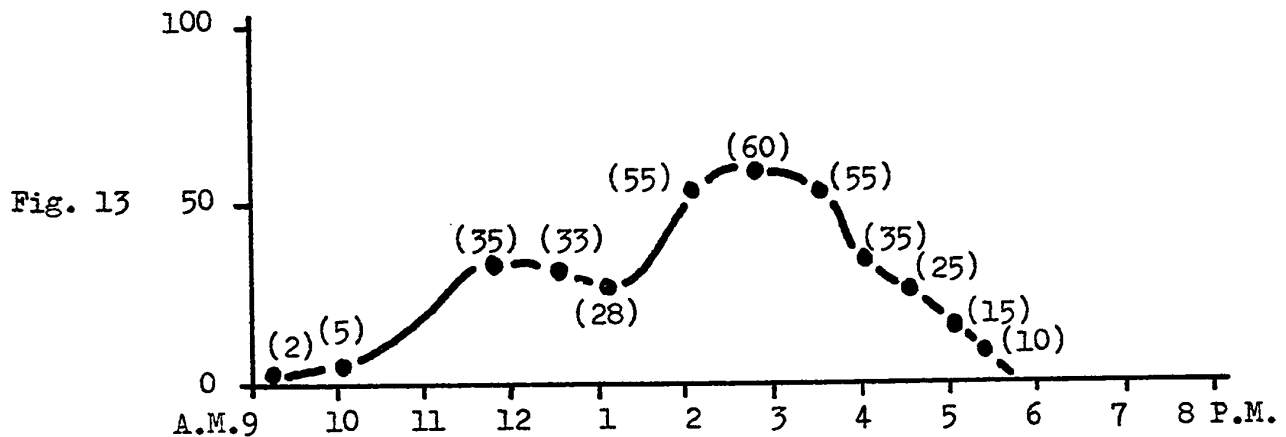
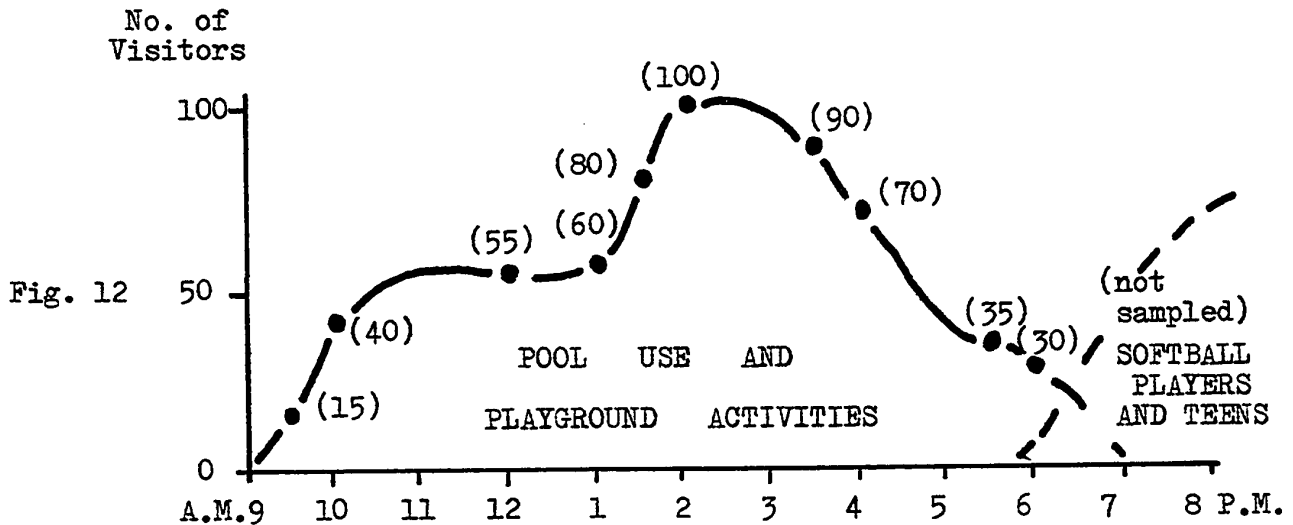
Use of McNabb Park, Wednesday, 29 July 1970



Figures 9 through 11. Use of McNabb Park, Saturday, 1 August 1970; Anglesea Square, Wednesday, 5 August 1970 and Saturday, 8 August 1970.



Figures 12 through 14. Use of Hawthorne Park, Wednesday, 12 August 1970 and Saturday, 15 August 1970; and Agincourt Park, Wednesday, 19 August 1970.



By calculating the total area under the use curves of Figures 8 through 14, it is possible to arrive at the volume of use of each park on each interview day (see Table 16). For urban parks, the use volume can appropriately be measured in units of visitor-hours, or even visitor-minutes, rather than the visitor-day units commonly applied to non-urban recreation areas.

Interviews were conducted with visiting groups as they left the park. Since the sampling fraction was given by the survey design (see Appendix II), an estimate of the number of visits to the park could be made directly from the number of interviews conducted. Since each group of visitors was interviewed only once, the actual number of visits would be somewhat higher than this estimate because of repeat visits by the same groups of visitors later in the day. Assuming that, on each interview day, the average visiting group had the same length of stay, the same number of group members, and the same likelihood of making a repeat visit, then observed volumes of use should be proportional to the number of visits on each day. The relationship between use volumes and estimated numbers of visits is shown in Table 16.

The correspondence between observed volumes of use and estimated visits is very close. If the observed volumes are arranged in descending order

TABLE 16
COMPARISON OF ESTIMATED VISITS WITH
OBSERVED VISITOR-HOUR VOLUMES

	McNabb		Anglesea		Agincourt	Hawthorne	
	Wed	Sat	Wed	Sat	Wed (only)	Wed	Sat
Observed volumes	2950	930	750	770	280	1100	510
Estimated visits	878	198	139	173	78	558	210

of magnitude, the estimated visits follow exactly the same descending order except for only one day, the Saturday interviews in Hawthorne Park.

If the use of a park were normally distributed over time, then the "peak use" of the park would provide an excellent indication of the total volume of visits on a given day. The "peak use" is the statistic most likely to be calculated by park department personnel, quoted in newspaper reports, and so on. However, it is clear from Figures 8 through 14 that the use of these selected parks was emphatically not normally distributed over time. Nevertheless the relationship between peak use and total use was quite close, as shown in Table 17 .

TABLE 17
COMPARISON OF VISITOR-HOUR VOLUMES
WITH PEAK USE ATTENDANCE

	McNabb		Anglesea		Agincourt	Hawthorne	
	Wed	Sat	Wed	Sat	Wed (only)	Wed	Sat
Observed volumes	2950	930	750	770	280	1100	510
Observed peak use	ca.260	100	75	90	49	100	60

If the observed volumes of use are arranged in descending order of magnitude, the observed peak attendance figures for each interview day follow precisely the same descending order. Thus, it may be concluded that peak use, if accurately observed, is a somewhat better indication of total use than estimates based on the raising fraction calculated for a sample of park visitors. On the other hand, the comparison presented in Table 16 would appear to suggest that, if reliable peak use data were not available, use estimates based on survey samples could be relied upon, at least to indicate relative orders of magnitude of use from one situation to another.

Figure 8 suggests that volumes of use over time may prove more nearly normal if the quality of type of use is differentiated. The apparent irregularity of the curve

in Figure 8 can be explained by assuming separate normal curves for pool use and ball playing, respectively. Pool use peaks generally occur in the early afternoon, the hottest time of day. Ball playing generally is done in the late afternoon when cooler temperatures and more shade prevail. Furthermore, such elements as the length of stay, the number in the visitor group, and the likelihood of a repeat visit are not constant in all situations, but depend upon the kind of activity or set of activities engaged in. In other words, even to estimate the number of visitors using a park over time requires a better understanding of qualitative differences in park use.

Qualities of Park Visits

The obvious distinction between baseball and swimming as forms of activity having different ecological requirements, was mentioned above as an explanation of the bimodal character of one park use curve. Most park use situations are not so simple to describe, much less to analyze effectively. The park user survey produced detailed information on the activities of users and various other aspects of their visits. Most of the information was in the form of dichotomous, yes-or-no variables. Relationships among the various aspects of park visits were explored using the phi coefficient and linkage analysis of the phi matrix.

The linkage analysis of park visit characteristics was carried out separately for each park on each interview day. The analysis was performed on phi coefficients of association among all the binary variables included in the questionnaire responses. Park use activities constitute the focus of the linkage groups. It is useful to have the other kinds of variables included in the linkage groups as an aid to interpretation. The complete list of variables included in the analysis is presented in Table 18.

The linkage groups derived for each interview day were all different: even in the same parks, there were differences in the relationships among activities between Wednesdays and Saturdays. The different "activity clusters" and related variables derived for each interview day are presented in Table 19.

Five distinctive clusters of activities and other variables could be distinguished. They were grouped under general headings indicating the activity constituting the primary basis of the clusters, but obviously, the detailed composition of each linkage group varied from park to park and from day to day within each park.

The first column lists the linkage groups which were related to child care. In two instances there was a positive relationship between child care and walking one's dog in

TABLE 18

LIST OF VARIABLES INCLUDED IN LINKAGE ANALYSIS

Code Name	Explanation
CHILDCARE	"Watching children" or "Caring for children"
WALKDOG	Walking or exercising dog in park
SWIMMING	Using wading pool for "swimming"
SWINGS	Using swings, slides, climbers, and other play equipment
TABLE	Playing table games such as checkers, ping-pong
MEETFRNDS	"Meeting friends" or "Getting together with friends" in park
SPORTS	Playing baseball, football or other sports
OTHER	Doing nothing, "bumming around", or engaging in miscellaneous activities not otherwise listed
0-5, 6-12, 13-18, etc	Age categories in years
RESPOND	Individual responding to questions
FAMILY	Member of immediate family of respondent
EXFAM	Member of extended family of respondent (cousin, aunt, uncle, etc.)
FRIEND	Friend of respondent, not otherwise related
SITTER	Non-relative and non-friend of respondent, usually a babysitter
RETURN	Party interviewed plans to return later to make another park visit
BFI	"Back-and-forth itinerary", that is, the visit is straight from home to the park and back, without additional destinations
FRENCH	Interview was conducted in French
MALE	Individual was of male sex
FOOT; BICYCLE; CARRIAGE; CAR	Mode of transportation used to reach park; carriage= baby carriage
RARELY	Party visits the park less often than once/week

TABLE 19
LINKAGE GROUPS OF ACTIVITIES AND OTHER PARK USE VARIABLES

Park and Day of Int'w	Activity Clusters				
	I. Childcare Score	II. Swimming Score	III. Social Score	IV. Sports Score	V. Other
McNabb Wed.	CAR 25-44 CHILD CARE 45-64 RESPOND WALK DOG	.850 .714 .541 .348 .228 .002 SWIMMING 6-12 BFI FOOT SWINGS EXFAM	.778 .643 .617 .417 .289 .143 MEETFRNDS FRIEND 13-18 TABLE	.815 1742 .653 .054 SPORTS 19-24	.824 .824 OTHER BICYCLE FRENCH .603 MALE .233
McNabb Sat.	SITTER 25-44 WALK DOG CHILD CARE	.928 .739 .652 .472 SWIMMING 6-12 FOOT SWINGS RETURN BFI	.833 .667 .640 .529 .363 MEETFRNDS 13-18 FRENCH RESPOND TABLE	.852 .701 .563 .339 .318 OTHER BICYCLE MALE 65+ FRIEND SPORTS	.817 .753 .621 .441 .395 .088 (OTHER) (BICYCLE) (MALE) (65+) (FRIEND) (SPORTS)
Angles. Wed.	CHILD CARE WALK DOG 25-44 SITTER	.923 .665 .423 .423 SWINGS SWIMMING 6-12	.789 .777 .634 MEETFRNDS TABLE	.856 .856 RESPOND 13-18 SPORTS	.823 .823 OTHER FRENCH
Angles. Sat.	CHILD CARE 25-44 WALK DOG WALK DOG SWINGS	.861 .861 .000 .000 SWIMMING 6-12 RETURN EXFAM FOOT MEETFRNDS FAMILY RESPOND OTHER	.877 .790 .684 .561 .204 .200 .158 -.010 -.348 TABLE	.000 SPORTS 13-18 MALE	.924 .791 .694 (SWIMMING) (6-12) (RETURN) (EXFAM) (FOOT) (MEETFRNDS) (FAMILY) (RESPOND) (OTHER)
Agin. Wed.	CAR EXFAM	.930 .729 SWIMMING FOOT	.718 .695 TABLE	.000 SPORTS MALE	.729 .699 OTHER 13-18 .812 .812

TABLE 19--Continued

	RARELY 45-64	.677	BFI MEETFRNDS	.718 .502		RETURN BICYCLE WALK DOG	.682 .600 .493
	0-5 CHILDCARE FAMILY SWINGS RESPOND 25-44	.407 .397 .093 .005 -.034 -.055					
Hawth. Wed.	25-44 RARELY CARRIAGE CHILDCARE	.838 .783 .603 .440	SWIMMING 6-12 RESPOND	.854 .744 .280	MEETFRNDS 13-18 RETURN FRIEND WALK DOG TABLE	.829 .772 .621 .430 .009 .000	SPORTS FOOT OTHER BICYCLE BFI FRENCH MALE EXPAN SWINGS
							.763 .763 .469 .363 .315 -.009 -.170
Hawth. Sat.	CHILDCARE RETURN FRENCH	.843 .711 .292	SWINGS SWIMMING TABLE	.733 .731 .516	MEETFRNDS 13-18 RESPOND BICYCLE FRIEND	.822 .607 .509 -.088 -.761	.000 WALK DOG RARELY OTHER .968 .968 .608

the park. This could result either from visitors taking their dogs and young children to the park at the same time, or from otherwise similar visitors taking either children or a dog to the park. The age group of young parents (25-44) was closely related to this cluster of activities in several instances; other variables fitting in with the cluster to a significant degree in one or more cases include use of a car to reach the park, the older adult age group (45-64), use of a baby carriage (reflecting the presence of the very youngest age group), and a rare frequency of park visits. In general, these clusters involving child care reflect those rare cases of adults accompanying children to the park, which account for virtually all cases of adults using the park (unless they come to walk the dog).

The activity clusters which centered on swimming would include the greatest numbers of park visits on both interview days in all parks except Agincourt. The elementary school age group (6-12) is strongly associated with the swimming activity in nearly all cases. Other variables included on one day or another in this cluster were: back-and-forth itinerary, use of playground equipment, travel on foot to reach the park, intention to return later in the day, visits by extended family groups, meeting friends, and playing table games. Clearly the core attraction in all cases

was swimming, with the 6-12 year-olds the dominant age group.

A third activity central to several clusters was meeting friends. This might suggest a "social" function of the parks, and indeed is often associated with the teen-age group to a significant degree. Other related variables include: friend of respondent, respondent, interview in French, table games, and intention to return later.

Related to this same teen-age group in two cases were sports activities. Participation in sports activities was another key variable which stood alone in the sense that no other activities were included in the linkage groups with sports. Sports were primarily engaged in by males of teen-age or older, who arrived either on foot or on bicycle, depending on the park, and who would return later to Agincourt Park where, on the day interviews were conducted there, a football practice had been scheduled for 6:00 p.m.

Surprisingly, the activity category "other" turned out to be a central variable in a number of linkage group clusters. One of the teen-age interviewers who helped with the survey on two occasions, noted the term "bumming" or "bumming around" on her questionnaire forms,⁴ in the space marked "other activities". Other interviewers, including

⁴The author is indebted to Marcia Voelzing for this contribution.

the author, often received the answer "nothing" when inquiring about a party's activities in the park. It would seem that the existence of substantial numbers of park visitors with no activities, or with non-activities such as "bumming around", indicated an unfilled potential for facilities and/or programs to meet the needs of some visitors.

Those engaging in "other" activities tended in some cases to be males, speak French and ride bicycles, and to be of teen age. There was only one interview with a dog walker in Hawthorne Park on Saturday, so the apparently strong relationship with dog walking on that day may be regarded as coincidental. It is also interesting to note that "other" activities were negatively related to swimming and playground activities, though not to a significant degree. Those with nothing to do apparently avoided the activities for which facilities were available to some extent. On-site observation in the parks indicated that the visitors doing "other" activities constituted a net liability to the overall quality of park use. For example, the author repeatedly observed a situation around 3:00 in the afternoon when teen-age boys would begin throwing girls and each other into the wading pool, even though they were too big for the pool and neither they nor their victims were dressed in bathing suits. Marijuana smoking, though rare, was also observed by the author during unsupervised times, as was "glue-sniffing".

Park Visits and Park Functions

There is a close connection between the kinds of activity clusters identified by the linkage analysis and the recreational "functions" of parks as outlined in Chapter IV. Swimming and related activities were participated in by the younger children, mostly 6-12 year-olds, who also used the playground equipment. A teen "social" function and a "sports" function were represented by the activities clustering around meeting friends and by sports as a distinct activity. Both meeting friends and sports activities were engaged in primarily by teen-age park visitors. This would seem to suggest that even though facilities for teen-agers are grouped together in the same parks, there are two distinct activity clusters, or "functions", or recreational interests on the part of teen-agers which bring them to the parks.

The "leisure" function was not available in any of the parks selected, except for the small number of benches in McNabb Park, and so one would expect that activities belonging to this function would not be observed in the course of the user survey. There were, however, two distinct activity clusters which perhaps fit the broad category of leisure uses. The "child care" complex of activities included activities of the adult age group in general. Dog walking was an activity of some adults which did not depend directly on bring-

ing children to the park. Other aspects of use of the parks involving adults were also different. Child care was not clustered together with particular activities such as swimming or use of playground equipment to any significant degree. The visitors engaging in child care were relatively infrequent visitors to the park in one case, and they tended to arrive in cars. Perhaps a leisure function was being served for these adults even though facilities were not expressly provided for the purpose.

The same might be said of the teen-agers, mostly boys, who engaged in "other" park activities. Not all such "other" activities were deleterious ones, previous comments notwithstanding. There used to be teens in the Jardin du Luxembourg "looking for each other, or running away from each other, or seeking solitude, the dreamers"; no doubt this continues to be a function of even small local parks, and it is a leisure function, even though, again, facilities have not been provided expressly for this purpose.

The Hard Core of Park Users

The qualities of park visits may be understood in perspective by noting the clear evidence from the park user survey, of the existence of a "hard core" population of park users in each of the four parks. On a scale of visiting frequencies from 1 to 3, with 3 representing visitors who came to the park "every day", the average response was 2.7! That is, by far

the majority of respondents said they came to the park every day.

The visitors who came every day also stayed for long periods of time. The average length of stay was approximately 50 minutes. Most respondents came to the park for swimming, and left between 1:00 and 2:00 p.m., to return to a home less than a quarter of a mile away.

The "hard core" of park visitors, included the 6-12 year-olds, and, to a lesser extent, the teen-agers. Table 20 shows the proportions of each of these two age groups, and the 0-5 year-olds, the third most numerous age group of users, who participated in each activity.

TABLE 20
ACTIVITIES ENGAGED IN BY AGE GROUP^a

Age:	Swim	Table	Sport	Swing	Dog	Child Care	Meet Frnds	Other	N
0 - 5 yr.	58.9	1.1	2.1	42.1			1.1	12.6	95
6 -12 yr.	69.6	3.1	7.2	29.4	1.4	3.5	9.9	24.4	513
13-18 yr.	31.9	9.2	20.9	7.4	1.2	11.7	31.3	35.6	163

^aNumbers are per cent in age group who participated in each activity (does not add to 100%). N = total number sampled in age group.

The numbers shown in Table 20 indicate the major foci of activity interests among the most numerous, and most frequent segments of the park visiting population. Swimming and playground equipment use absorbed virtually all of the activities (except "other") of the younger visitors. The teens also used the wading pool (and complained to interviewers that they needed a deeper pool, "une piscine plus creuse") but were much more inclined than the younger visitors to engage in sports activities, meeting friends, etc.

Additional information was obtained on the nature of hard core park usage by regression analysis in which the frequency of park visits was taken to be the dependent variable. The nominal activity variables were treated as dummy variables for the purpose of regression, as discussed in Appendix I.

Considering all 806 park visitors, the activity variables significantly related to high frequencies of park visits included swimming, table games, meeting friends, and "other" activities. Dog walking was significantly related to low frequencies of park visits. (Since they were engaging in a prohibited activity, dog walkers would have a motive for evasive responses, behavior, or both.)

The activities basic to the central functions of the four parks-- use of playground equipment and sports activities-- were not correlated with high visit frequencies to a significant degree. Thus there was a relationship between the less

common activities and regular visits to the parks.

The results of the regression of various activity variables on visit frequencies appear in Table 21 . The relationships are not strong on the whole, with less than eight per cent of the overall variance of visit frequencies accounted for by all of the activity variables taken together.

TABLE 21
RELATIONSHIPS BETWEEN ACTIVITIES AND VISIT FREQUENCY

Activity:	Swim	Table	Sports	Play Equip	Dog	Watch Child	Meet Frnds	"Other"
Coefficient	.17	.26	-.035	.00	-.75	.05	.15	.15
t (797) ^a	4.0	2.8	0.5	0.1	4.7	0.7	2.7	3.3
Overall Regression Results:								
				Intercept	= 2.57			
				Standard Error	= 0.50			
				F(8,797) ^a	= 8.55			
				multiple r	= 0.28			
				r ²	= 0.079			

^aNumbers in parentheses represent degrees of freedom for significance tests.

A second regression was run to examine relationships between the respondent and other members of his group as these might have a bearing on park visit frequencies. At the same time the effects of different modes of transportation used to reach the park were considered.

There were clear differences in group structure evident in the first day of interviews (McNabb Park, Wednesday), which led the author to modify the questionnaire to permit the identification of relationships among individuals in the visiting group. For simplicity in questioning, only the relationship to the respondent of each group member was ascertained, although it would be entirely possible for the respondent to be "friends" with two group members who were "brother and sister" to each other. Because this variable was not identified until after the first survey trial, the data are limited.

Among the possible relationships to the respondent (immediate family, extended family, friend, and "other"--usually a babysitter or babysitter's charge), the immediate family and "other" categories seemed to be most closely related to high visit rate frequencies.

Of the various modes of transportation used, bicycles and baby carriages appeared to carry the frequent visitors more consistently, in contrast to those arriving on foot or by other modes of transportation such as busses and cars. Results of this regression appear in Table 22.

Of all the age groups recorded for park visitors, only one appeared to have a negative relationship with visit frequencies: the group 65 years and above. All age groups lower than this were positively related to frequency of visits.

TABLE 22

RELATIONSHIPS AMONG VISITORS AND MODE OF TRANSPORTATION
ON PARK VISIT FREQUENCIES^c

Variable:	Immediate Family	Extended Family	Friend	Baby Sitter	On Foot	Bicycle	Baby Carr.	Car
Coeffi- cient	1.68	0.82	1.80	1.87	2.50	1.47	2.34	0.21
t(792) ^a	3.09	1.11	1.42	2.90	1.43	1.80	2.48	0.09

Overall regression results:

Intercept	= 12.99 ^c
Standard Error	= 0.90 ^b
F(13,792) ^a	= 4.49 ^b
Multiple r^2	= 0.26 ^b
	= 0.05 ^b

^aNumbers in parentheses represent degrees of freedom for significance tests.

^bStandard Error, F, r and r^2 are based on a regression equation which included activity variables in addition to visitor relationships and modes of transportation.

^cFor this regression, the exponential transformation of visit frequency was used.

However, the relationships were so small that, in fact, there were no significant relationships between age of the visitor and visit frequency. This is not to say that all park visitors come from the same age groups: the mean values for each group indicate the near-normal distribution of park visitors around a mean in the 6-12 year age bracket: the "mean" value constitutes a proportion of visitors in the given age bracket, since

each visitor was scored 0 or 1 in each age category and since the categories were mutually exclusive. The proportions of visitors in each age category are shown in Table 23 .

TABLE 23
PROPORTIONS OF VISITORS IN EACH AGE CATEGORY
(SELECTED WEDNESDAY VISITOR SAMPLE)

Age Group	65+	45-64	25-44	19-24	13-18	6-12	5-	Total
%	0.6	0.3	2.0	0.3	19.7	64.3	12.8	100.0

The sex of visitors was also recorded along with their ages. Females were scored 0. and males, 1. On this basis the average score was 0.54, meaning that 54% of the visitors were male, and 46% female, virtually an even total. There was also no significant relationship between sex and visit frequencies.

The interviews were conducted by bilingual interviewers so that respondents were free to answer in the language of their choice. It turned out that the language spoken by the respondent was quite significantly related to the frequency of park visits. The relationship was in the negative direction, i.e., those speaking French had significantly lower visit frequencies than those answering in English.

The variables which continued to be statistically significant up to this point were included in a stepwise multiple regression to sort them out in the order of their degree of bearing on park visit frequencies, as indicated by the F-test. Eleven significant variables were identified. The results of the stepwise regression appear in Table 24.

TABLE 24
SUMMARY OF VARIABLES RELATED TO HARD CORE USAGE AS
INDICATED BY VISIT FREQUENCIES

Step no.	Variable name	Sign	Multiple		F
			r	r ²	
1.	Will return later ^a	+	.37	.14	84.82
2.	Length of stay	+	.41	.17	22.83
3.	Child care ^a	-	.44	.19	14.11
4.	French response ^a	-	.46	.21	12.79
5.	Time of interview	-	.48	.23	10.47
6.	Day of interview ^a	+	.49	.24	8.46
7.	Sports activities ^a	+	.50	.25	10.16
8.	Swimming ^a	-	.51	.26	6.39
9.	Distance	-	.52	.27	5.20
10.	19-24 ^a	-	.53	.28	3.32
11.	13-18 ^a	-	.53	.28	1.80

^aIndicates nominal variable

Because of the possible errors involved in using nominal variables in a regression equation, the eleven variables listed in Table 24 were cross-tabulated with visit frequencies with the results tested by Chi-square. The Chi-square test showed that child care, the day of the week, and a visitor age of 13 to 18 years were not significantly related to visit frequencies at the 5% level of confidence.

The list of eleven variables was reduced, therefore, to eight, all with a definitely significant relationship to park visit frequencies. Together with the frequency variable, they help describe "hard core usage" of a park. The "hard core user" was one who . . .

- . . . lived close to the park,
- . . . visited the park every day,
- . . . stayed in the park for long periods of time,
- . . . arrived early in the day,
- . . . made several visits during the day, and
- . . . engaged in sports activities.

Those who tended not to be "hard core users" include . . .

- . . . those speaking French,
- . . . those coming to swim, and
- . . . older teen-agers and young adults.

Some of the variables related to hard core usage were consistently significant in the same way in all four situations, while others were not. The above variables were included in stepwise regressions on park visit frequencies in each park separately, with the results shown in Table 25.

The "length of stay" was positively associated with frequent visits in three of the four parks, as was the probability of returning later in the day. Interviews with frequent visitors also tended to occur earlier in the day in three of the four parks. In other words, the frequent visitors came earlier, stayed longer, and then came back again for more later. If the number of frequent visitors

seems inordinately large, then consider how imbalanced the picture would be if, instead of the number of visiting days per week, the dependent variable had been the number of visitor-hours per week! In that case, a still smaller number of visitors would account for virtually all of the total park use.

TABLE 25
VARIABLES RELATED TO HARD CORE USAGE
IN EACH OF THE FOUR PARKS^a

P a r k	Step no.	Variable	Sign	F to enter	P a r k	Step no.	Variable	Sign	F to enter
M	1.	distance	-	39.5	H	1.	child care	-	56.1
c	2.	child care	-	11.1	a	2.	19-24	-	33.1
N	3.	interview time	-	11.0	w	3.	return	+	24.8
a	4.	length of stay	+	9.8	t	4.	French	-	8.3
b	5.	sports	+	5.5	h	5.	length of stay	+	6.5
b	6.	6-12	+	2.7	o	6.	interview day	-	6.5
	7.	walk dog	+	4.4	r	7.	interview time	-	4.0
A	1.	return	+	34.8	n	8.	6-12	+	3.2
n	2.	interview day	+	15.9	e	9.	65+	+	2.4
g	3.	interview time	-	12.5		10.	male	-	2.1
l	4.	65+	-	5.8	A	1.	return	+	31.6
e	5.	French	-	6.4	g	2.	length of stay	+	24.7
s	6.	sports	+	5.8	i	3.	swimming	-	13.9
e	7.	child care	+	2.4	n	4.	65+	-	5.5
a					.				

^aOnly variables with F values greater than 2.0 are listed.

Among activities, sports turned out to be a source of relatively higher visit frequencies in three of the four parks, table games in two of the parks. The results were mixed for the most prevalent activity: swimming. The swimmers in Anglesea Park were more frequent in attendance, while the swimmers in Agincourt were relatively less so. Watching children also had mixed results, being a source of more regular visiting in Anglesea Park but of more irregular visiting in Hawthorne Park.

Some variables were significant in only one park. The dog walkers came to McNabb regularly. This is possibly a reflection of the lack of vacant lots, urban renewal land, or just plain open space in the McNabb area. Some alternative areas suitable for this purpose were available in each other neighborhood. A conclusion which might be drawn from this result is that densely developed areas with little open space available should be provided with special dog walking facilities, otherwise this activity will inevitably gravitate toward the local park. This is in fact a serious matter, as described by James Schmid:

Beck estimates that New York City's dogs deposit between 15 and 55 tons of feces and more than 53,000 gallons of urine daily (The Ecology of Stray Dogs, Baltimore: York, 1973). Dog feces are a prime source by which eggs of the nematode Toxocara canis reach humans, especially children. The resulting human disease, visceral larva migrans, is not readily diagnosed except in its ocular form, which can cause permanent blindness. . . .
 (J.A. Schmid, "The Environmental Impact of Urbanization", Review Paper for Handbook on Geography and Environmental Education, A.A.G. Commission on College Geography, forthcoming).

Hawthorne Park was the only one in which meeting friends seemed to have a significant relationship with frequencies of visits. In McNabb Park, those who used the playground equipment tended to be the less regular visitors. These "unique" qualities of the two parks do not immediately lend themselves to geographic interpretation.

The relationships between visitors' ages and their visit frequencies also varied from park to park. McNabb and Hawthorne apparently tended to attract 6-12 year olds on a regular basis, while this age group was significantly among the less frequent visitors to Agincourt Park. Teenagers were notable only in their lack of frequent attendance at Anglesea Park, while the somewhat older 19 to 24 year-olds tended to be less frequent visitors to both of the "suburban" parks, Hawthorne and Agincourt. The "senior citizens" 65 years and older were among the less frequent visitors to Anglesea and Agincourt parks, but among the more frequent visitors to Hawthorne Park.

Interpretation of the effects of visitors' ages requires an initial assumption. The assumption, which corresponds to Jane Jacobs' question, would be that a "successful" park would be one in which all age groups were represented on a more-or-less equal basis. Given this assumption, it is encouraging to see age group categories missing from the list of significant factors, somewhat

discouraging to see them present, regardless of whether the association is positive or negative in sign.

McNabb and Hawthorne parks would be considered to be over-concentrated in the elementary school group, according to this assumption. Agincourt Park was outstanding in that it managed to discourage three out of four age groups to an unusual degree. With respect to Agincourt, it should be mentioned that visitation was light on the day the interviews were conducted, and the football season was just beginning. Therefore many of those interviewed were teen-age football players warming up in the afternoon and intending to return in the evening for a scrimmage. This was a totally different character of use than in the other three parks, and is accounted for by the oncoming change of season and corresponding change to fall sports activities. It remains true, however, that all four parks appeared quite specialized in the age groups they would attract. Also, for some reason Hawthorne Park appeared to have a greater appeal for females than males. It remains to be seen whether the specialization were simply representative of differences in the age and sex structures of the four neighborhoods, or whether differences in the parks themselves might be construed to be the major reasons for specialization.

There was a significant tendency for those interviewed in French to be less regular park users, in both of the areas where French was spoken often enough to permit the comparison to be made. This finding tends to suggest

that there might be a different "style" of park use among the French population. This question is taken up further in Chapter VIII.

Surprisingly, the results with respect to the day of the week were not consistent. In Anglesea Park, those interviewed on Saturday tended to be the more regular visitors. In Hawthorne Park, those interviewed on Wednesday were more regular in attendance. In McNabb Park there was no significant effect of day of the week, and in Agincourt Park the difference was not ascertained. These results may be placed in context by recalling the apparent general tendency toward less intensive use of the parks on Saturdays.

The unanswered question is why, in some parks, those who attended during the week are less in evidence on the weekend, while in other parks they may be more in evidence? The specific difference here is between Anglesea Park and Hawthorne. One possible explanation might be that more parents in the Anglesea area were at work on Saturday, and therefore their children were at the park as on any other day. Perhaps more of a "weekend atmosphere" exists in the relatively affluent neighborhoods where residents enjoy more leisure time, and the pace of life on weekends becomes transformed thereby. It is even conceivable (though this cannot be verified by the data of the present study) that some neighborhoods are pleasant and lively enough on week-

ends to keep people at home, whereas others may be perceived by their residents as places to flee at the least opportunity.

Regular visitors to the park, the "hard core" clientele, seemed to be proportionally more in evidence on Saturday in an urban core park (Anglesea) and less so on Saturday in a suburban park (Hawthorne). Different parks attracted different age groups and seemed to repel some groups: especially young adults from both of the suburban parks. One inner city park (McNabb) attracted dog walkers as frequent visitors,

A suburban park (Agincourt) attracted swimmers on a casual basis, the other suburban park (Hawthorne) attracted mothers and babysitters the same way; whereas swimming and child supervision were activities of regular visitors to Anglesea Park. A suburban park (Hawthorne) had a regular clientele of visitors who came to "meet friends", that is, to meet each other. Playground equipment tended to be used by infrequent visitors to one of the inner city parks (McNabb).

Some factors, however, remained constant in their effects on visit frequencies in all four parks, and accounted significantly for high visit frequencies in at least three of the four parks under consideration. The itineraries of visitors were one such factor. In all cases the higher frequency visitors were also the ones who arrived earlier, stayed longer, and returned again later in the day after being interviewed. Sports activities and table games were activities that tended to be engaged in by more frequent

park visitors. These activities, of course, were provided as part of the regular park program sponsored and encouraged by recreation supervisors; many of the other activities were of a casual or, at least, unorganized nature. (It should be noted, however, that organized league games and other such events were not the subject of the surveys conducted for the present study). The participation of "frequent visitors" in these activities reflect, perhaps, their preference for the particular activities for which the parks are well suited, by virtue both of design and of programs provided. A consistent relationship was found between language spoken in the interview and frequency of park visits: those speaking French tending to be less regular in attendance. With respect to the ages of visitors, the 6-12 year old group were not only by far the most numerous, they also tended to be the most frequent visitors in two of the four parks (McNabb and Hawthorne).

Park Functions, Activities, and Use

In the preceding discussion, several different aspects of park use have been considered. Beginning with the simple enumeration of park users over time, it was noted that the observed use curves reflected particular functions, or clusters of activities, which had peaks at different times of day. Upon closer scrutiny, it was found that the ac-

tivities of park users could be grouped into clusters which resembled the equipment functions identified in Chapter IV. However, the precise activities constituting each function differed from one park to another, and from day to day within the same park.

In all situations, the phenomenon of a "hard core" of park users was apparent. The hard core users accounted for the overwhelming majority of total park use. They were elementary school-age children or younger teen-agers. They tended to live close to the parks and to speak English rather than French.

A distinction must be made between hard core usage of the parks and the hard core users. Swimming was by far the most popular activity and was the "hard core" of the summer park program in this sense. The most frequent park visitors, on the other hand, tended to be those who came for sports activities; or to be those who came for nondescript "other" activities.

When hard core usage was analyzed separately, it became apparent once again that the use patterns were different in each park. Of the eight activity variables considered in the study, only sports tended consistently to attract regular visitors in all four parks.

In Chapter IV, it was shown that the four parks selected for detailed investigation were functionally similar

in terms of their equipment provision. Now, in Chapter V, we have seen that the use of each of the four parks was highly variable, both qualitatively and numerically, from park to park, from day to day even from hour to hour. The next two chapters are devoted to explaining the observed differences with reference to park accessibility, and selected social characteristics of surrounding neighborhood populations.

CHAPTER VI

ACCESSIBILITY IN RELATION TO PARK USE

Accessibility includes various obstacles potential users face in reaching a park. A more accessible park is one for which such obstacles are reduced. Other things being equal, one would expect a more accessible park to be chosen in favor of one less accessible. Other things, of course, are never equal in reality, since the kinds of facilities offered, values and tastes of potential users, and the weather do vary from one situation to another.

Accessibility is primarily a function of distance, relative to the mode of transportation used to reach the park. The overwhelming majority of the users surveyed in the four selected Ottawa parks arrived on foot. Their "expenses" were limited to the effort required to travel the distance to the park on foot. Thus, the primary measure of accessibility used for the study was the foot distance to each park. The overwhelming majority were also coming from home to the park and directly back home again. Contour maps were drawn of each park's zone of influence, with foot distances measured in 100 foot intervals from residential locations to the interview stations located at the outer corners of the parks. From these maps, the foot

distance to the park from the home address given by each respondent was estimated, by interpolation, to the nearest ten feet.

Although the possible differences in park facilities were controlled by the selection of similar parks in which to conduct surveys, nevertheless there were alternative areas which could be used by potential park visitors for much the same purposes. Park visitors were asked where they would have gone if the park were not there. Households responding to the mail questionnaire listed other parks visited by household members, participation in institutional alternatives to public recreation such as parish programs or the Y.M.C.A., and use by younger household members of streets, sidewalks, backyards and vacant lots as alternative recreation sites.

Both foot distance to the park under investigation, and the availability and use of alternative opportunities were considered as aspects of accessibility in this study.

Foot Distance and Park Use

After some experimentation, the author accepted the conclusion of the Baltimore playground study (Dee and Liebman, 1970), and grouped observations of park visitor distances into categories reflecting the square of the foot distance required to reach the park. This was accomplished

by combining the 100-foot distance zones into progressively larger areas. For each source area, the visit rate was calculated as the ratio of respondents interviewed in the park, to the total land area included in the residential zone from which they came.

The locations of respondent home addresses in relation to distance from the parks are illustrated in Figures 15, 16, 17, and 18. The calculation of visit rates is presented in Table 26. The trends of visit rates in relation to distance are plotted in Figures 19 and 20. The largest number of observations was available for McNabb Park; therefore the McNabb data were used to compare the distance trend for the Saturday as opposed to the Wednesday visitors. Although the numbers of visitors in the park on Saturday were less, the distance relationship was similar considering the slope of the trend line.

Aside from the distance effect, the magnitude of visits is indicated by the intercept of the trend lines at zero distance. It is entirely possible that the differences recorded in Figures 19 and 20 result from differences in the weather on the given interview days.

Regardless of the intercept of the trend lines, the particular effect of accessibility, including both distance and the availability of substitutes, is shown by the slope of the line. Figure 19 shows that the slopes of the trend lines were quite different in the four cases.

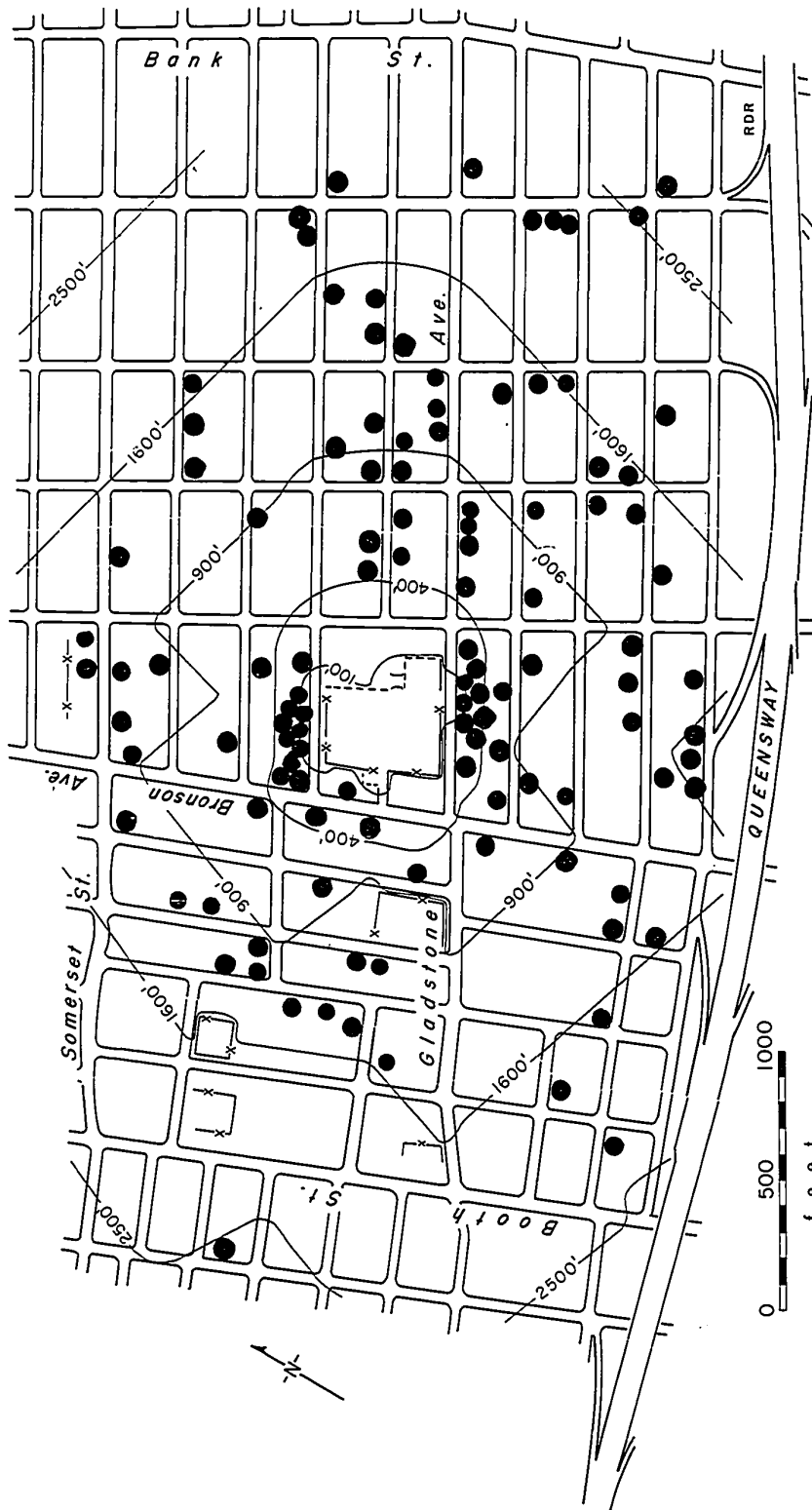


Fig. 15. Park User Origins and Foot Distances to McNabb Park

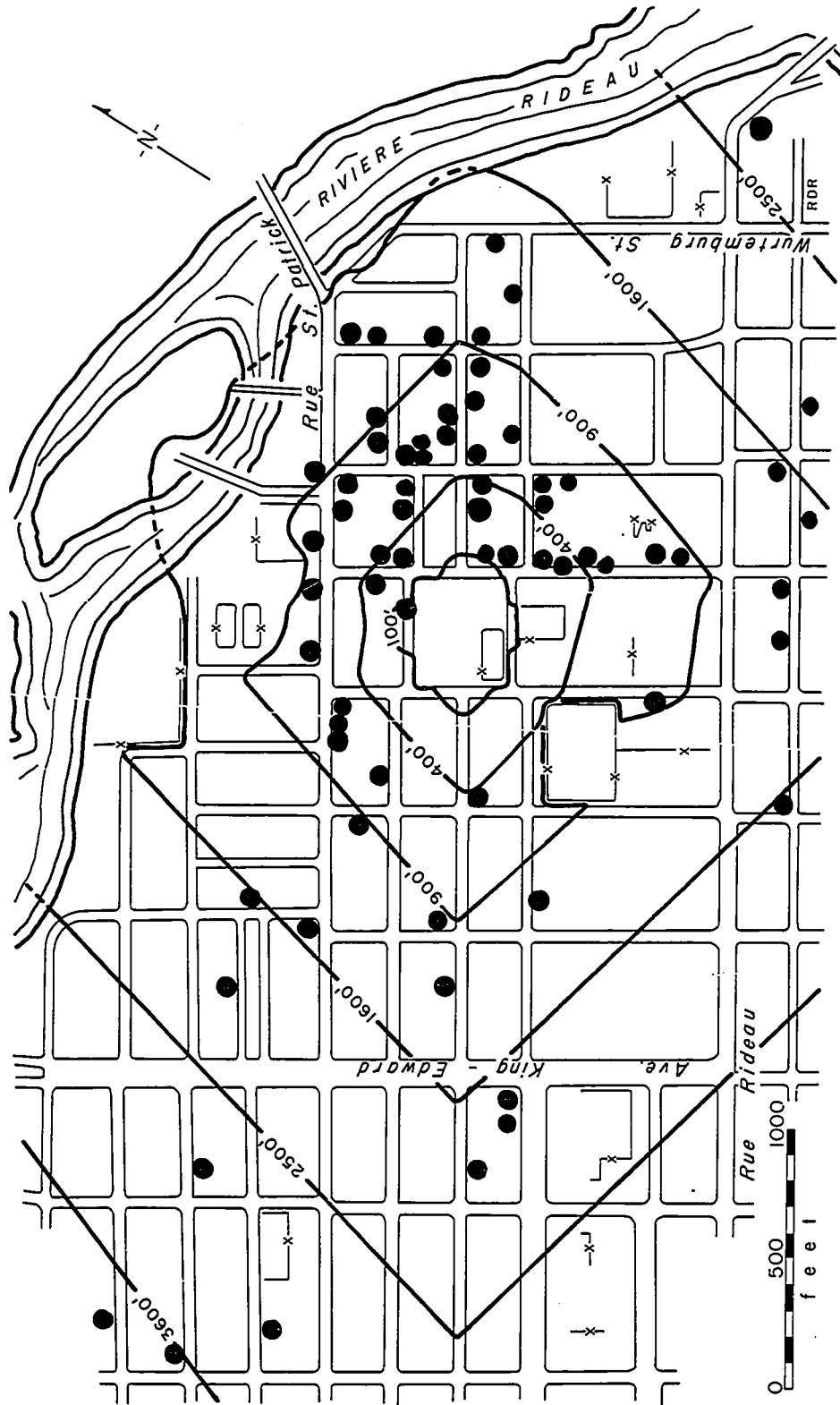


Fig. 16. Park User Origins and Foot Distances to Angelsea Square

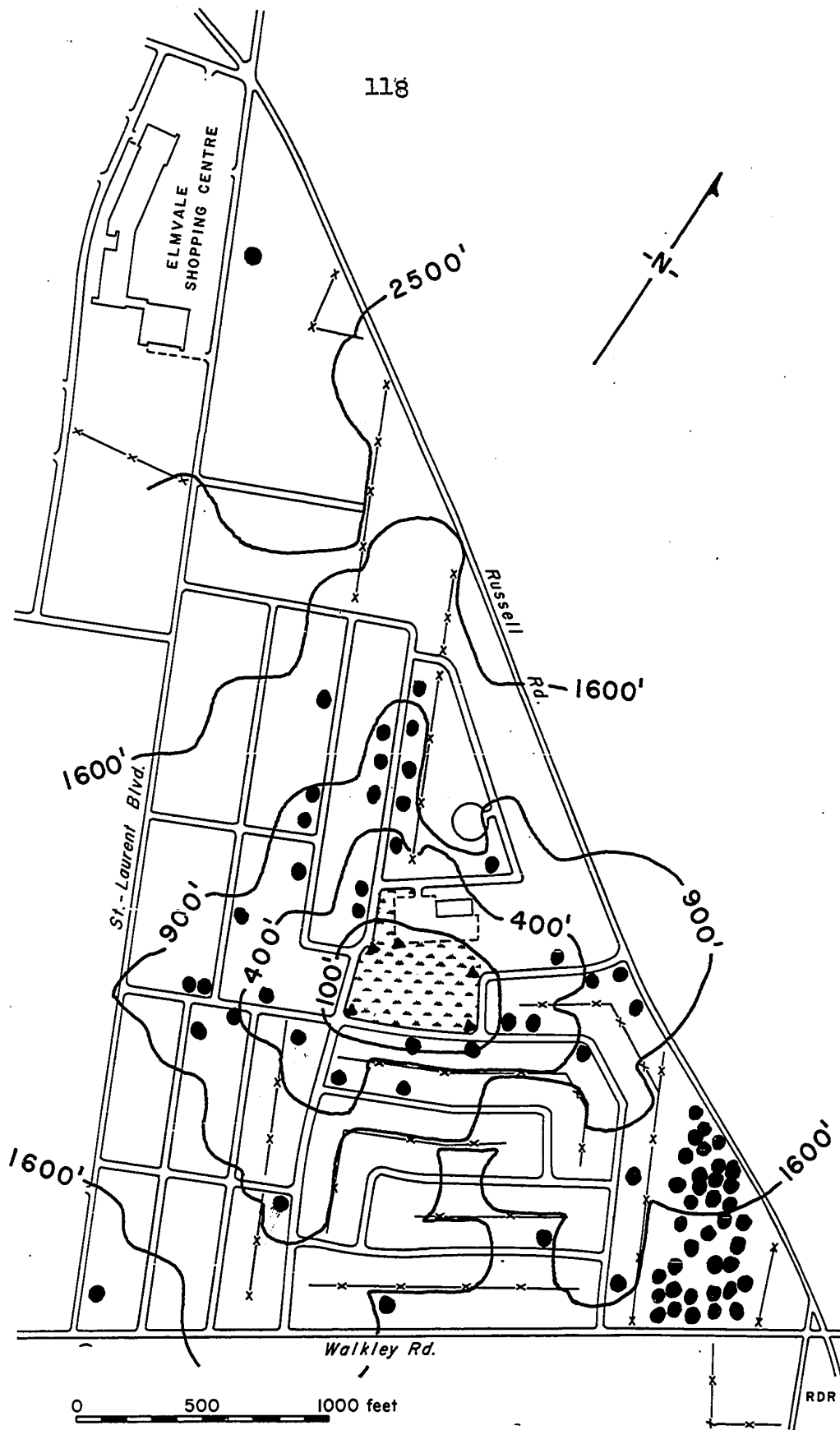


Fig. 17. Park User Origins and Foot Distances to Hawthorne Park



Fig. 18. Park User Origins and Foot Distances to Agincourt Park

TABLE 26
 RATE OF VISITS PER UNIT AREA
 BY DISTANCE TO EACH PARK

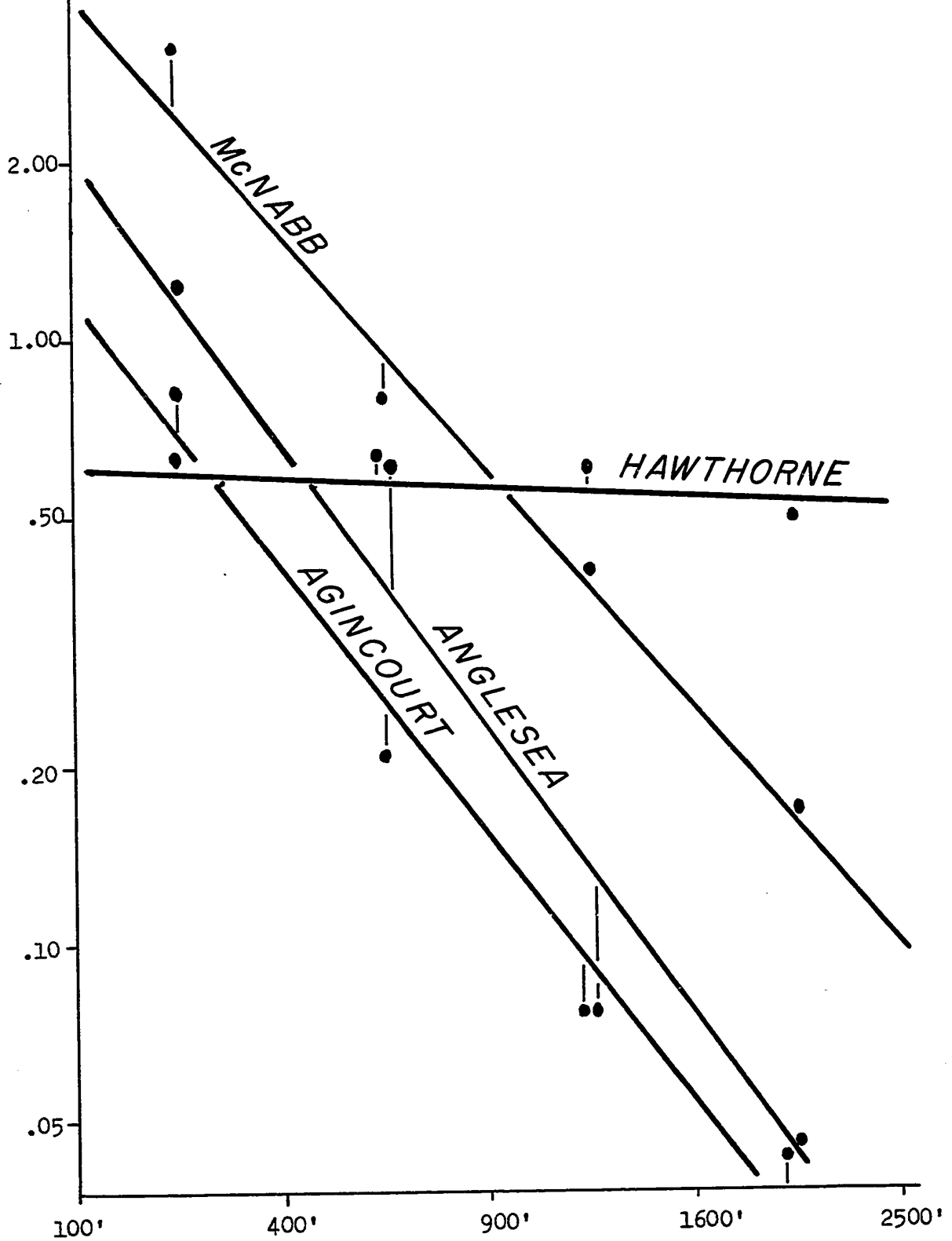
Park / Day		Distance			
		100-400'	400-900'	900-1600'	1600-2500'
McNabb / Wednesday	interviews	27	27	31	13
	area ^b	11.6	39.6	103.7	100.9
	rate	2.33	0.70	0.30	0.13
McNabb / Saturday	interviews	11	3	10	4
	area ^b	11.6	39.6	103.7	100.9
	rate	0.95	0.08	0.10	0.04
McNabb / both days	interviews	38	30	41	17
	area ^b	11.6	39.6	103.7	100.9
	rate	3.28	0.78	0.40	0.17
Anglesea / both days	interviews	21	26	7	3
	area ^b	16.0	40.0	83.0	85.0
	rate	1.31	0.65	0.08	0.04
Hawthorne/ both days	interviews	11	24	39	16
	area ^b	16.9	37.6	61.8	32.0
	rate	0.65	0.64	0.63	0.50
Agincourt/ Wednesday	interviews	7	7	7	8
	area ^b	8.5	33.0	88.0	(large)
	rate	0.82	0.21	0.08	ca. 0.04

^bUnit area is 40,000 square feet. Areas measured by a compensating polar planimeter on base maps scaled one inch to 200 feet.

VISIT RATE

5.00

Fig. 19. Decline of Visit Rates with
Distance from Each Park



VISIT RATE

5.00

Fig. 20. Decline of Visit Rates with Distance from McNabb Park (Wednesday and Saturday samples)

2.00

1.00

.50

.20

.10

.05

100'

400'

900'

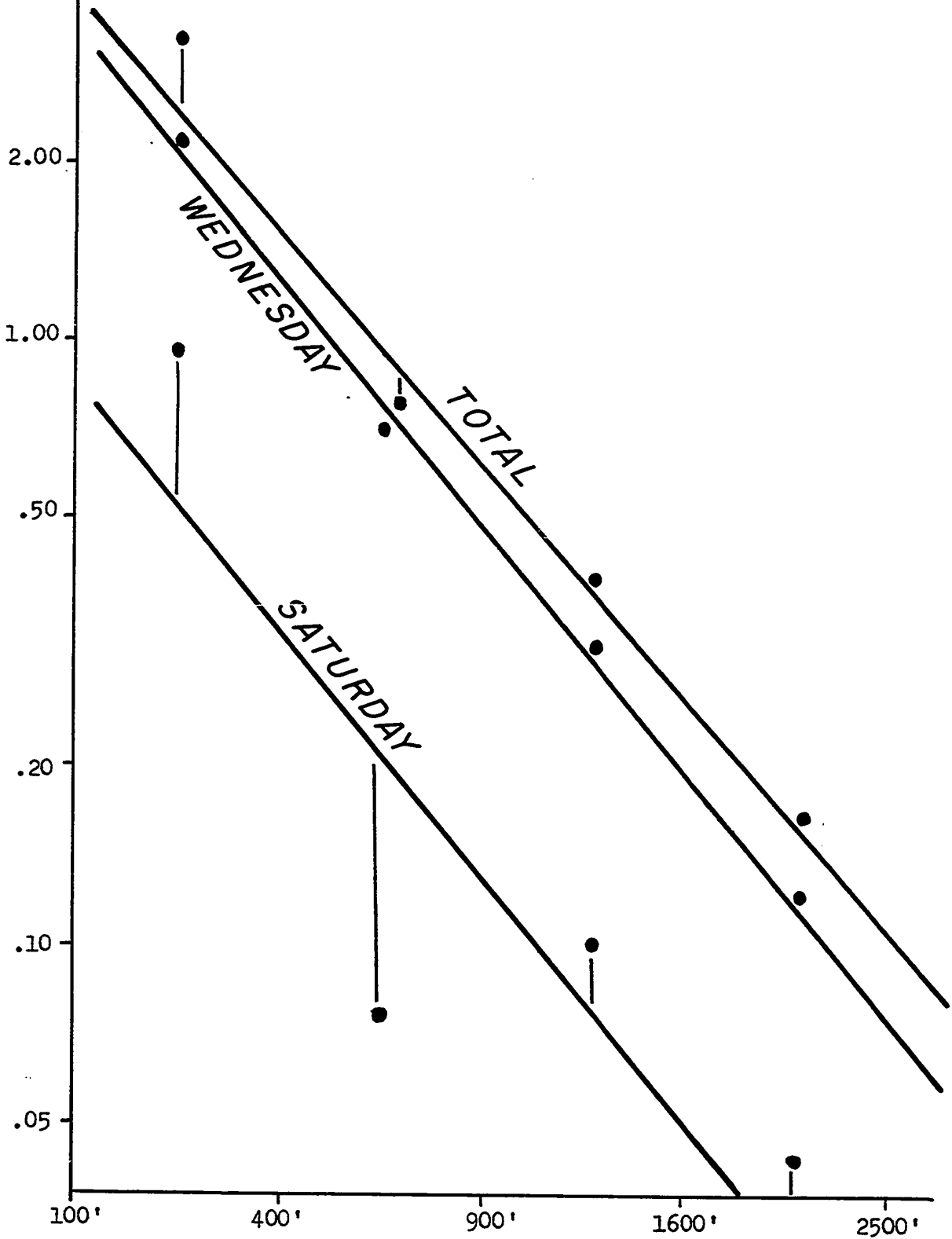
1600'

2500'

WEDNESDAY

TOTAL

SATURDAY



Distance-Elasticity of Park Demand

The "elasticity" of demand is the extent to which a proportional change in cost becomes reflected in a resulting proportional change in volume of sales of a given commodity. The concept of elasticity may be applied directly to the effect of distance on the "demand" for, or propensity to visit, urban parks. As has been previously demonstrated, (Rugg, 1967, 15) the distance-elasticity of park demand is the same as the slope of the distance-decay function of park visit rates, when plotted on a logarithmic scale.¹ "Perfect elasticity", or infinite slope of the visit rate curve, would be represented by a vertical line on the graph: if the park were even one foot further away, no one would visit. "Perfect inelasticity", or no slope of the visit rate curve, would be indicated by a horizontal line: no matter how much further away the park were located, the same proportion of the population would visit anyway.

To pursue the analogy with economic goods a step further, the actual volume of visitors (or volume of good consumed) presumably has to do with the quality of the park and the degree of need felt by the population of potential visitors. The slope of the demand curve, on the other hand, depends not on the quality of the park itself, but on the availability of substitutes for the park. Greater distance-elasticity of demand indicates a greater prevalence of substitutes.

¹In the case of a curvilinear distance decay function, of the form $y = ax^{-b}$, the elasticity is constant ($-b$). If the function were of some other form such as a straight line, $y = a - bx$, the elasticity would be variable. It could still be

Availability of Substitute Areas

Of the four examples presented in Figure 19, the case of Hawthorne Park represents the closest approximation to a situation of perfect inelasticity of demand. By referring to the map of Hawthorne Meadows neighborhood (Figure 17), one may note that this neighborhood is surrounded by three busy traffic arteries: Walkley Road, Russel Road, and St. Laurent Boulevard. It may be imagined that these arteries would discourage use of alternate parks, all of which were located outside these boundaries. Such a conclusion is not entirely warranted by other information obtained in the survey: several visitors to Hawthorne Park, when asked about alternative areas they might visit if the park were not there, mentioned parks across St. Laurent Boulevard as acceptable substitutes; furthermore, several visitors to Hawthorne Park were on "multiple-destination itineraries" (Rugg, 1973), which included shopping centres across St. Laurent as additional trip destinations. However, to the extent that the major roads, especially St. Laurent, deter park visitors from crossing, it would appear that Hawthorne Park has monopoly control in its neighborhood, and that without available substitutes, distance does not reduce visits in the way that one might expect.

read directly from the slope of the function on a logarithmic scale, however. For example, the slope of $y = a - bx$, when plotted on logarithmic paper, varies from 0 as $x \rightarrow 0$ to $-\infty$ as $y \rightarrow 0$.

The apparent elasticities of demand for the remaining three parks constitute a puzzle offering no intuitively obvious explanation. McNabb and Agincourt parks, in opposite socio-economic neighborhoods, had virtually identical distance-decay slopes. Anglesea Square, the farthest of all four parks from the nearest neighboring city park, had the greatest elasticity of demand with respect to distance.

One possible solution to this puzzle might lie in a broader definition of substitute areas. Large back yards with play equipment, or back yard wading pools, or both, are one form of substitute which was investigated by Norbert Dee. Vacant lots and city streets comprise two other kinds of areas which support some of the same functions as urban parks do. These are larger areas than back yards, and thus have the capacity to absorb entire neighborhood groups; they lack the facilities provided in a developed park, however. It seemed to the author that the "suburban" streets in Ottawa were less attractive as play spaces than streets in the older parts of the city. They lacked sidewalks except along bus routes, and many were bordered by open storm drainage ditches. It is also possible that, given the greater emphasis on automobiles in suburban areas, the traffic may have been more intense on the suburban streets than in portions of the inner city. Observations in the field tended to reinforce the idea that the streets and sidewalks of Basse-Ville were much more

alive with activity than those of the suburban-style neighborhoods. The McNabb area, similar in its location and economic character to Basse-Ville, was dissected by several major traffic arteries (Bronson, Bay, Catherine, Somerset, and Percy). There appeared to be less use of streets and sidewalks in the McNabb area than in the area around Anglesea Square.

In contrast to streets and sidewalks, vacant lots were more prevalent and better suited to use as park substitutes in the more "suburban" areas around Agincourt and Hawthorne Parks. Substantial use of vacant lots was observed by the author in the area around Agincourt Park. Few vacant lots remained in the area close to Hawthorne Park; vacant land in this area was on the periphery of the built-up portion of the neighborhood, in contrast to the park with its almost perfectly central location.

No information was obtained in the park user survey that could be used directly to assess the relative significance of streets, sidewalks, vacant lots and back yards as substitute "park" areas. Visitors were asked what they would have done if the park were not there, but use of streets or vacant lots was not generally volunteered as a response. Many visitors to Anglesea Square cited the "Patro" or patronage of the Catholic Church as the alternative they would use. Therefore, visitors in that area did have a clear

institutional substitute, which could help explain the higher elasticity of demand for Anglesea Square. Also MacDonald Gardens, a large "leisure use" facility owned by the National Capital Commission, was but two blocks away from Anglesea Square.

Information on the use of alternative areas was contained more specifically in the household survey results. The frequency of park visits by households provided a basis for an interpretation of the role and importance of substitute areas through the information provided in this survey.

Use of Alternative Areas by Households

Two measures of local park visit frequency were obtained from the household survey: visits by children under 13 years, and visits by teen-agers aged 13-18. These two frequency measures were used as dependent variables in regressions which considered distance and a number of possible substitute areas as explanatory variables. The regression results are presented in Tables 27 and 28.

High frequencies of visits to parks by children were related to four major alternatives, but all in a positive direction. Back yards and streets were used by the more frequent park visitors. In the Basse-Ville area, perhaps in anticipation of urban renewal, children who visited parks regularly went to Lafontaine (in Hull) or to MacDonald Gardens as well as to Anglesea Square. The net effect of

TABLE 27

ALTERNATIVE AREAS AND DISTANCE IN RELATION
TO CHILDREN'S PARK VISIT FREQUENCIES^a

Step entered	Variable	Coefficient	Std. error	F to remove
1. b	back yard	.54	.16	11.7
2. b	street	.95	.19	24.7
3. b	Anglesea Square	.97	.27	12.7
4. b	Lafontaine Park (Hull)	1.17	.28	18.0
5. b	Agincourt Park	.77	.22	12.8
6. b	Hawthorne Park (teen visits)	1.23	.47	6.7
7. b	MacDonald Gardens	.94	.36	6.8
8. b	McNabb Park	1.73	.49	12.4
9. b	Britannia Park	-.49	.42	1.3
10. b	Copeland Park	-.99	.44	5.2
11.	teen park visit frequencies	.24	.07	10.5
12. b	Weston Park	-1.15	.49	5.6
13. b	Le Breton (people's) Park	-.98	.42	5.5
14.	distance	.00	.00	2.7
15. b	Agincourt Park (teen visits)	-.39	.35	1.3

^aStepwise multiple regression results at step 15.

Overall results: intercept=.01, multiple $r=.82$, $F(15,128)=17.4$.

^bIndicates nominal variable.

TABLE 28

ALTERNATIVE AREAS AND DISTANCE IN RELATION
TO TEENS' PARK VISIT FREQUENCIES^c

Step entered	Variable	Coefficient	Std. error	F to remove
1. b	Hawthorne Park	2.49	.47	28.5
2. b	McNabb Park	2.19	.29	56.3
3. b	Agincourt Park	1.81	.32	32.3
4.	child's park visit freq.	.27	.07	13.2
5. b	Le Breton (people's) Park	1.67	.39	18.4
6. b	Anglesea Square	.61	.26	5.6
7. b	Britannia Park	-1.08	.40	7.2
8.	no. days at summer camp	-.02	.01	6.5
9. b	Weston Park	.93	.48	3.8
10. b	street	-.35	.19	3.3
11. b	Copeland Park	.73	.43	2.9
12. b	Agincourt Park (children's visits)	.37	.23	2.6
13. b	back yard	-.17	.16	1.2
14.	distance	.00	.00	.7

^cStepwise multiple regression results at step 14.

Overall results: intercept=-.06, multiple $r=.84$, $F(14,129)=22.7$.

^bIndicates nominal variable.

the use of such alternative areas was that distance from the four selected parks was virtually ineffective in explaining overall park visit frequencies of children in households. The regression coefficient of the distance term amounted to .0001.

The teen-agers with high visit frequencies were more likely to have younger children in the same household also with high park visit frequencies. Whereas the children used back yards and streets as complementary areas, the teen-agers apparently used them, plus sidewalks and vacant lots, as true substitutes in that the use of such areas was negatively related to park visit frequencies among the teen-agers. Summer camps were also a substitute for the teen-agers, with the number of days spent at summer camp negatively, and rather strongly related to frequencies of park visits. Again, the effect of distance was negligible (coefficient = .00007).

For both children and teen-agers, visits to Brittania Park were negatively associated with high overall park visit frequencies. This result supports the previous conclusion that this park offered a more specialized kind of recreational function.

The regression results contradict, in part, the idea that alternative recreation areas constitute substitutes, or competing opportunities, in the economic sense, to the local neighborhood park. For household children, visits to the selected parks were positively associated with visits to

other parks and the use of back yards and city streets as play areas. Apparently there were enough other opportunities available that the overall visit rates to parks were not affected by distance.

Park visits by teen-agers, by contrast, reflect a clear pattern of substitution of other kinds of recreational facilities for local parks. Again the pattern was not influenced by the distance of a household from the selected park. The teen-agers who used back yards, streets, sidewalks and vacant lots tended to visit local parks less frequently, as did those who spent time at summer camps away from home.

It appears that whatever influences a household to send its children to local parks regularly, also encourages visits to other kinds of recreational areas. The observed use frequencies among children, who constituted the hard core clientele of the selected parks, must reflect variables other than distance and the availability of substitute areas.

This conclusion cannot be applied to the use of a particular local park. As the data from the park user survey clearly show, there was a definite trend of declining visit rates with foot distance from all but one of the four selected parks. Nevertheless, the household survey showed constant overall park visit rates at each distance from the selected parks, other things being equal. In the Hawthorne

Meadows neighborhood, where there were no other local parks available, the visit rate did not decline.

The general conclusion to be drawn from these results is that households with children have some particular level of need or desire to use public parks; the need is met by apparently rational decisions to use local parks according to physical proximity; however, the need is variable among households and reflects different propensities to use public parks as well as alternative areas such as back yards and city streets.

The rational allocation of public park opportunities requires an understanding of those characteristics of households which affect the likelihood that they will or will not include children who are "hard core" park users. This problem is addressed in Chapter VII, which concludes Part B of the dissertation.

CHAPTER VII
HOUSEHOLD LEISURE PATTERNS AND OTHER SOCIAL
CHARACTERISTICS OF PARK USERS

What are the chances that a given household will include "hard core" park users? In the previous chapter, it was shown that the answer to this question was not found in the accessibility of a household to any of the four selected parks. The present chapter examines the social characteristics of households, including particularly patterns of household leisure activities. A regression analysis format is used to find which attributes and behaviors of households seem most closely related to high frequencies of visits to local parks. On the basis of the findings of the present chapter, a tentative model of park use is elaborated in Chapter VIII.

Patterns of Household Leisure

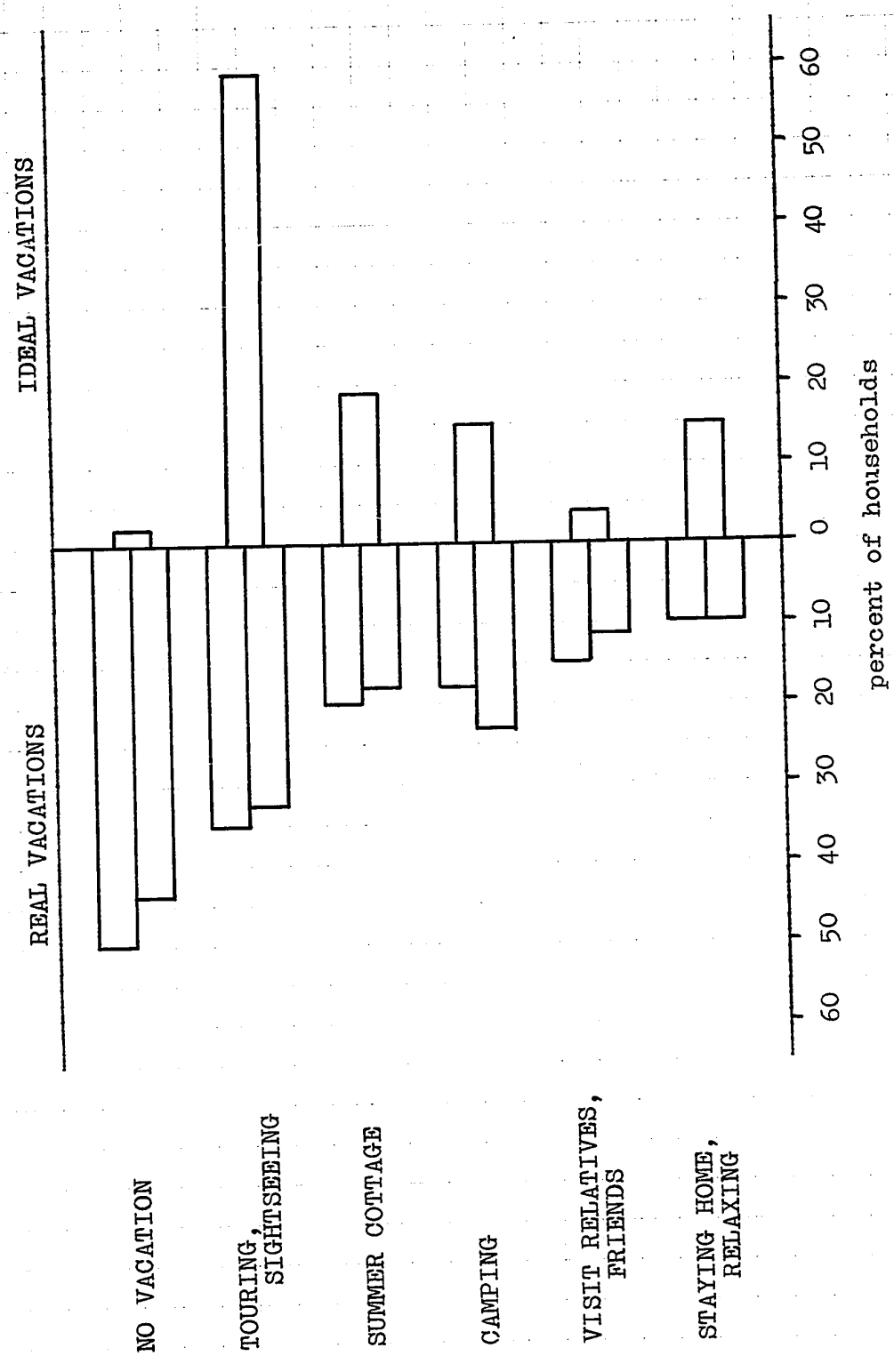
Just as urban parks may be conceived to comprise a functional hierarchy, patterns of leisure activities may be ordered in an analogous way. The leisure opportunities of households depend upon a hierarchy of segments of leisure time, which presumably govern not only the durations, but also the structure and functions of the kinds of leisure

activities chosen by the household members. The annual vacation is the highest order of time period for all except "retired" households, followed by weekends and "holidays", down to the short periods at lunch time, after school and in the evening which recur on a daily basis throughout the year. The questions about leisure activities included in the questionnaire were organized according to this rubric. (No attempt was made either to verify or to deny the existence of such a leisure hierarchy, as was done with respect to the parks hierarchy.) A very large number of activities, and of aspects of activities were covered by day, by season and by year. The problem at this stage was to identify patterns of related activities, and to choose measures which would indicate the participation by a household in one or more general patterns of leisure activities.

Vacations

The first several questions of the household questionnaire related to vacations: in the year prior to the survey (1970), in the year of the survey (1971), and ideal vacations. The open-ended questions were coded according to the kind of activity engaged in and the geographic location of the vacations. The most common activities included no vacation, touring and sightseeing, staying at a summer cottage, camping, visiting relatives and friends, and relaxing at home. Figure 21 compares the frequencies of responses for each

Fig. 21. Activities for Real and Ideal Vacations. Real vacations shown for 1970 (upper line) and 1971 (lower line).

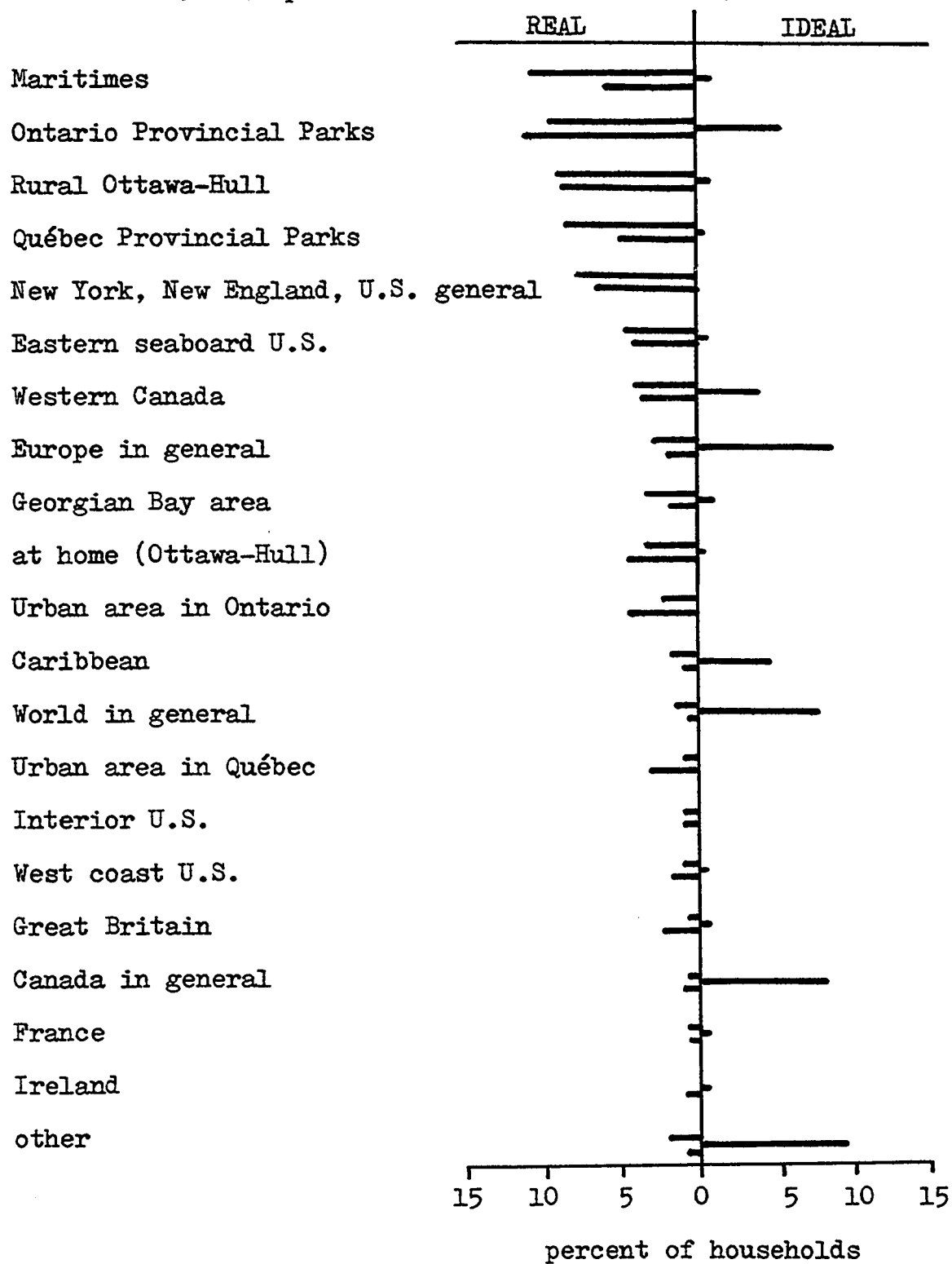


type of activity for both years of actual vacations, and for the ideal vacations.

The most striking difference between the actual and ideal vacations was the large number of respondents with "no vacation" in each year, in contrast to the negligible number who considered that no vacation was an ideal situation. Visiting relatives and friends was also listed less frequently as an ideal than as an actual vacation activity. Touring and sightseeing, the most common vacation in the two years, was even more popular as an ideal activity. Apparently, time and money constraints limited the vacation activities of many respondent households: either they were unable to take a vacation or they reluctantly accepted the hospitality of relatives and friends. Less constrained households engaged in vacation activities resembling closely the image of ideal vacations described by respondents as a whole.

Further differences appeared between actual and ideal vacations with respect to their geographic locations. Whereas only a minority of respondents attained these objectives, the overwhelming majority of ideal vacations were located in Western Canada, all across Canada, or even more so outside Canada altogether. The dramatic difference between experience and ideals in the location of vacations is illustrated in Figure 22. Using this illustration, it is possible to distinguish those vacations which people presumably would

Fig. 22. Locations of Real and Ideal Vacations. Real vacations shown for 1970 (top line) and 1971 (bottom line).



rather not take but do, from those which they would rather take but cannot.

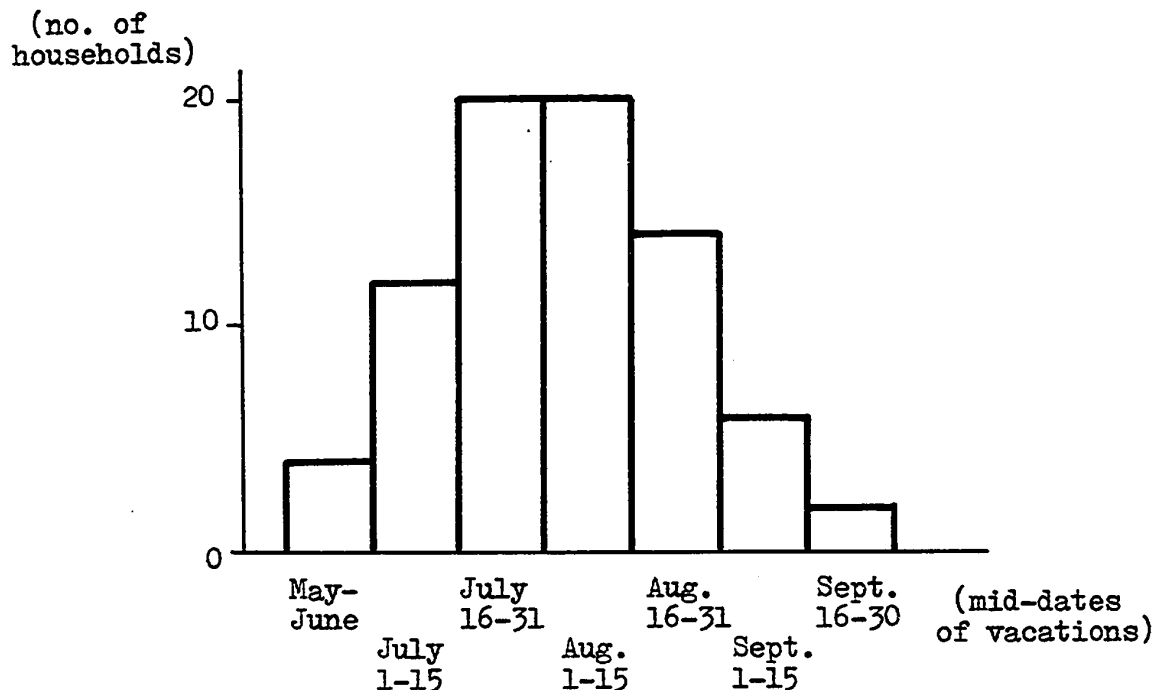
The places respondents would most like to visit are Canada in general (including visits to the Yukon and the Northwest Territories, and trips across Canada), Europe in general and the world in general. The Caribbean Islands, or Antilles, are another place respondents would most like to be, especially in the winter. In contrast are the places of low desire but high participation: the rural area surrounding Ottawa-Hull (including the Outaouais, Rideau Waterway, Mississippi River, Thousand Islands, etc.); the Maritimes; New York, New England and the Eastern Seaboard of the United States (including Miami and Fort Lauderdale); and the Provincial parks of Quebec and Ontario. In interpreting these differences, it must be recalled that travelling and sight-seeing is but one of several possible vacation activities. Those who preferred to spend vacations at home, were well aware and appreciative of the high level of recreational resources available for these purposes in the Ottawa-Hull region, and neighboring regions of eastern North America.

French-English differences were explored in all respects having to do with vacation itineraries. Very little difference was found, except for the tendency of French respondents to place a higher value on visiting friends and relatives as a form of ideal vacation, with a consequent

lower evaluation of camping as a vacation activity. Preferred locations for ideal vacations were the same between the French respondents and the overall population, except that France rather than the Caribbean occupied fifth place on the list.

Specific dates were recorded for vacations during the year of the survey. Thus, both the timing of the vacations and their length were known, in addition to the qualitative aspects of activities and locations. Figure 23 shows the distribution of mid-dates of respondent vacations in 1971. The vacations were concentrated in the summer, the modal mid-date being around August 1st. Thus, the timing of vacations coincided with the period of maximum use of local urban parks.

Fig. 23. Timing of Summer Vacations



Weekend Recreational Behavior

The questionnaire contained an inventory of possible outdoor recreational activities commonly engaged in on weekends at various seasons of the year. Respondents were asked to indicate not only which activities in the list were engaged in, but also which were their favorite activities, either of themselves or of other members of their households, at each season. Only those activities engaged in by 20 or more households in the sample were subsequently analyzed.

On the basis of responses to this series of questions, it was possible to classify respondent households according to a typology of weekend recreational behavior. This was accomplished through a "phi" correlation matrix of activities which was submitted to linkage analysis. The results of this analysis were quite interesting in themselves, and proved subsequently to be a useful tool for further analysis of other aspects of recreational behavior.

Golfers, horseback riders, gardeners, nature students, picnickers, those who drive for pleasure, and campers were isolated by the analysis as constituting separate, or independent, categories of weekend recreationists. Other activities were combined with one or more different activities in distinctive patterns. Surprisingly, a high correlation existed between those playing hockey in winter and those riding bicycles for pleasure in the spring and fall,

and many respondents in this category also listed such activities as ice skating, tobogganning, swimming in the summer and skiing in winter as among their activities. Skiing, it should be noted, had the lowest degree of relationship to this category, with a typical relevancy of only 0.15. It is therefore properly considered a separate category similar to golfing or gardening.

Surprisingly, canoeing and water skiing were linked together in a single category. These two activities represent incompatible uses of water for recreation when they occur in the same area, but apparently many of the same people do both.

Sportsmen who engaged in fishing in the spring and summer often continued with hunting activities in the fall.

An interesting complex activities apparently depended on cottage ownership. Those who visited cottages during autumn weekends, also visited them in the summer and to a lesser extent in the spring of the year. Most of the same people were snowmobile enthusiasts in the winter, and many enjoyed cruising in power boats in summer. Since the key to this complex was clearly cottage ownership, it indicated some wealth and, above all, the investment of wealth in private recreational facilities and equipment. Snowmobiles and power boats are also expensive and imply that their owners had established themselves in a second home away from the city.

The final group is again somewhat surprising, as it links the active sport of hiking in the spring, summer and fall, with "passive" attendance at outdoor concerts and plays.

Separating skiing as a distinctive activity category, there appear to be thirteen different categories of weekend recreational endeavor practiced by the sample of Ottawa households. These categories are identified along with the activities of which they are comprised, in Table 29. Since the list includes aspects of behavior and the behaviors are related within households, the categories constitute at the same time, a set of behavioral categories which typify the households themselves. Whether or not a household belongs in one or another category depends upon the method used to define membership. A simple approach is to use the variable with the highest typical relevancy in a given group. Most of these, it will be noted, are summer activities, although many such summer activities are closely related to other pursuits engaged in at other times of the year.

The number who participate in a given activity do not, of course, necessarily reflect the degree of their commitment. Thus, a similar analysis was performed on the list of favorite activities as distinct from the list of activities merely engaged in. A few surprising differences resulted in the patterns of variables associated with each category, and some were split. The associations of favorite activities reflect motivational categories in the sense that respondents

TABLE 29
TYPES OF WEEKEND RECREATIONAL BEHAVIOR

Type	Variables	Typal Relevancies	Type	Variables	Typal Relevancies
Golfer	summer golf spring golf	0.98 0.98	Sportsman	summer fishing spring fishing autumn hunting	0.90 0.89 0.71
General Activist	autumn bicycling spring bicycling winter hockey summer bicycling winter ice skating winter tobogganing summer swimming winter alpine skiing	0.90 0.90 0.87 0.69 0.68 0.64 0.51 0.15	Cottager	autumn cottage visits summer cottage visits winter snowmobiling spring cottage visits summer cruising in power boat	0.89 0.86 0.84 0.40 0.39
(Skier)			Picnicker	summer picnicking spring picnicking autumn picnicking	0.87 0.87 0.75
Water- oriented	summer canoeing spring canoeing summer water skiing	0.93 0.92 0.65	Driver for Pleasure	summer driving spring driving winter driving autumn driving	0.88 0.87 0.81 0.67
Horseback Rider	summer horseback spring horseback	0.96 0.96	Camper	summer camping spring camping autumn camping	0.89 0.87 0.86
Gardener	summer gardening spring gardening	0.95 0.95			
Nature Student	summer nature study spring nature study autumn nature study	0.93 0.92 0.91	Hiker	summer hiking spring hiking autumn hiking summer attending outdoor concerts and plays	0.84 0.83 0.83 0.53

expressed their preferences among the activities listed. While the result is a step away from the purely behavioral observation of the presence or absence of a given activity for a given household, it is a step closer, perhaps, to the social preferences (or "demands" in the economic sense) for the activities.

In the categories defined by favorite activities, the golfer remains a golfer, the camper a camper, the gardener a gardener, the horseback rider a horseback rider. The driver for pleasure finds this his favorite activity in the spring, summer and fall, but not in the winter. The skier becomes somewhat more strongly associated with the "water-oriented" recreationist than with the "general activist", but still at a low typical relevancy such that skiing remains, in effect, a separate single-variable category. The cottager does not really enjoy snowmobiling as a favorite activity, but does derive maximum enjoyment from hunting, and among winter activities, tends to prefer driving for pleasure.

The general activist appears in a more refined light as one who enjoys bicycling most in the spring, summer and fall, and hockey in the wintertime. The remaining activities formerly associated with these have been displaced to other categories.

Two winter activities, snowmobiling and tobogganing, were both preferred by those who enjoyed picnicking most in

the spring, summer and fall. Hiking in the spring was a favorite activity of those who most enjoyed nature study, whereas summer and fall hikers were more inclined to prefer attending outdoor concerts and plays. Fishermen were identified as a separate interest group, since hunting was favored more often by cottagers than by fishermen in the list of favorite activities.

The most common activities were isolated as a new category by the favored activity criterion: swimming in summer and ice skating in winter.

The results of the linkage analysis of favorite activities are presented in Table 30 .

The highest typal relevancies were first derived for the following variables: summer golf; autumn bicycling; summer canoeing, kayaking, rafting; summer horseback riding; summer gardening; summer nature study; summer fishing; autumn cottaging; summer picnicking; summer driving for pleasure; summer camping; and summer hiking. It may be recalled that winter skiing was a distinctive activity for which none of the preceding variables was a good predictor. The list of favorite activities leads to essentially the same results. Driving for pleasure, hiking and picnicking were preferred more in the autumn than in the summer, but this may simply reflect the lower number of alternatives

TABLE 30
LINKAGE GROUPS OF FAVORITE WEEKEND ACTIVITIES

Type	Variables	Typal Relevancies	Type	Variables	Typal Relevancies
Golfer	summer golf spring golf	0.99 0.99	Picnicker and Winter Activist	summer picnicking autumn picnicking spring picnicking summer swimming winter tobogganning winter ice skating winter snowmobiling	0.84 0.81 0.76 0.57 0.57 0.52 0.37
Horseback Rider	summer horseback spring horseback	0.99 0.99			
Driver for Pleasure	summer driving autumn driving spring driving	0.94 0.90 0.85	Camper	summer camping spring camping autumn camping	0.88 0.86 0.84
Water- oriented (Skier)	spring canoeing summer canoeing summer water skiing winter alpine skiing	0.87 0.86 0.70 0.21	Nature Student	summer nature study spring nature study autumn nature study spring hiking	0.86 0.79 0.78 0.54
Cottager	autumn cottage visits summer cottage visits spring cottage visits autumn hunting summer cruising in power boat winter driving	0.87 0.85 0.73 0.52 0.52 0.23	Hiker	autumn hiking summer hiking summer attending outdoor concerts and plays	0.88 0.80 0.70
Cyclist	autumn bicycling summer bicycling spring bicycling winter hockey	0.89 0.87 0.83 0.60	Gardener	summer gardening spring gardening	0.89 0.89
			Fisherman	spring fishing summer fishing	0.88 0.88

available in the fall. Among the activities originally listed in the "general activist" category, summer swimming and winter ice skating were separated into a new category through analysis of favorite activities. These are so widespread that it might prove useful to include each as a further diagnostic or "indicator" variable of distinctive weekend leisure activity patterns. Thus, a total of 15 variables are retained from the original list of 42, each representing a distinctive type of weekend leisure activity independent of other types.

Daily Outdoor Recreational Activities

A classification of daily leisure activity patterns was also made on the basis of linkage analysis. Ten daily activity vectors were analyzed in conjunction with 34 other binomials from the household questionnaire. The resultant grouping is not a "pure" linkage analysis of daily activities. On the other hand, closely related activities are still necessarily grouped together. Only those which were more closely related to other kinds of variables, such as recreational equipment or T.V. viewing patterns, than to other daily activities would be isolated. This mixing of variables had the advantage that interpretation of the broader significance of the activity variables was possible without further analysis. The results appear in Table 31.

Table 31
LINKAGE GROUPS OF DAILY ACTIVITIES

Variables	Typal Relevancies	Variables	Typal Relevancies
I		IV	
hockey stick	.80	tent	.87
baseball and bat	.79	sleeping bag	.87
basketball	.78		
fishing tackle	.73		
ice skates	.73		
hockey uniform	.65	V	
attend public school	.63	watch television 12-2	.86
attend university	.59	watch T.V. 10 a.m.-12	.72
+walk the dog	.58	watch T.V. 2-4 p.m.	.58
shotgun or hunting rifle	.51		
bathing suit	.45	VI	
toboggan or sled	.44	visit Vincent Massey	.84
skis	.33	visit Exp. Farm	.84
car	.32		
watch television 8-10 pm	.28	VII	
bicycle	.17	visit Rockcliffe Park	.82
+backyard barbecue	.15	visit Gatineau Park	.82
II		VIII	
English spoken at home	.89	bilingual household	.80
questionnaire in English	.89	+walk to and from work	.80
III			
+snow play (snowman, igloo)	.82		
+hide-and-go-seek	.68		
+accompany young children			
to park	.64		
+use play equipment or			
swimming pool in own			
yard	.60		
attend separate school	.55		
watch T.V. 4-6 p.m.	.50		
+sunbathe in afternoon	.50		
French spoken at home	.33		
watch T.V. 6-8 p.m.	.28		
watch T.V. 10-12 p.m.	.28		
take off-season vacation	.18		
+go for walk (without dog)	.12		
+sit quietly on veranda	.12		

+Indicates daily outdoor recreational activity

The first linkage group consisted of 17 vectors of which 2 were daily activities: dog walking and backyard barbecues. Of the remainder, most were various kinds of recreational equipment. Households engaging in these activities also tended to have children in public school, or university, or both. A general image of suburban affluence emerges, which happens to include dog ownership (hence, dog walking) and private backyards for barbecues. This first category is dramatically geographic in its implications for recreational land use.

A second linkage group includes numerous activities: snow play; neighborhood games such as hide-and-go-seek; accompanying young children to parks; using play equipment or wading pools in one's back yard; sunbathing on summer afternoons; taking walks without dogs; and sitting quietly on one's veranda. Only one equipment variable is included in this group: backyard swing sets. Other variables include children attending separate schools, taking off-season vacations and speaking French at home. It is clearly a group based upon families with children. The fact that some of the families take off-season vacations is an indication that the group is based independently of financial considerations.

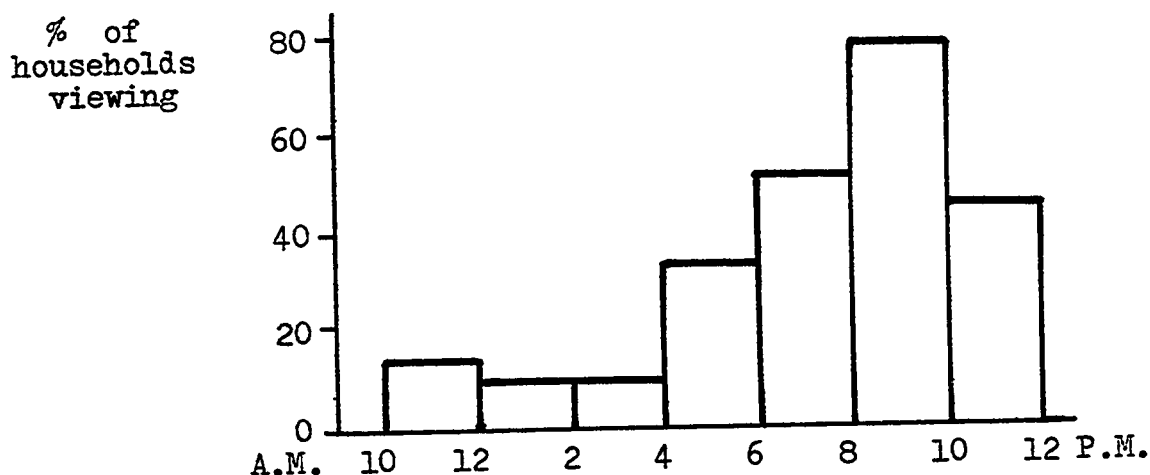
The only remaining activity is walking to and from work. For some reason, this activity was linked with bilingual

households. However, the correlation between the two was a low 0.28. The two variables were each independent of all others, and fell together only because the method of linkage analysis requires that every variable combine with at least one other, even if the correlation between them be low. The other linkage groups did not contain daily recreational activities. They will be considered further among "other social characteristics" in a subsequent analysis.

The overwhelming importance of television as a factor affecting participation in daily leisure activities was demonstrated for the Montréal suburb of Jacques Cartier (La Plante, 1969). Therefore, households were questioned as to the time of day during which they would ordinarily watch T.V., and these results were analyzed along with the linkage analysis of daily outdoor recreation activities.

The bimodal frequency distribution of viewing hours is illustrated in Figure 24.

Fig. 24. Television Viewing Habits



The general pattern was not equally followed by all groups of the respondent population. The affluent households which owned a variety of recreational equipment, were more likely than others to watch T.V. between 8 and 10 p.m., that is, in the late evening. The families with more children were more likely to watch television from 4 p.m. to 8 p.m., and then resume watching from 10 p.m. to midnight (presumably after the children were in bed). A separate group of mid-day T.V. watchers was identified: those households with the T.V. on between 10 a.m. and 4 p.m. This group did not include any other variables in the linkage analysis. An examination of the original phi correlation matrix from which the linkage analysis was derived, shows a minor positive correlation with play equipment in the back yard, and slight negative correlations with toboggan ownership and having completed the questionnaire in English. Although these are not adequate for definite conclusions to be drawn, they seem to reinforce the common conception that daytime television viewing is more prevalent among housewives who stay at home and their small children who are not yet old enough to attend school. Whatever reasons may explain daytime television viewing, the fact that it occurs in some households may certainly be understood as a factor having a negative influence on possibilities for outdoor recreation.

To summarize the findings with respect to television, there appear to be three distinct viewing patterns. There are those who watch primarily during "prime hours" from 8 to 10 p.m., those who watch from 4 to 8 p.m., and those who watch television during the daytime until 4 p.m. The three distinctive time periods are late evening, after school hours, and during school hours respectively. The ages and school status of children would appear at least hypothetically to have a direct bearing on viewing habits. Pre-school age children and their mothers may watch T.V. during school hours. Younger children may watch television after school, but probably go to bed by 8 p.m. Older school children and adults may watch television later in the evening. For each of these age groups, the choice at each given time of day may be whether to watch television or engage in some form of outdoor recreational activity.

Household Leisure and Use Of Local Parks

In the above discussion, variables have been identified which describe the characteristic activity patterns of sample households with respect to vacation, weekend and daily outdoor recreational behavior. It remains to explore relationships between these activity patterns and park use, taking into account social, economic and other differences among the households in the sample.

Vacations and Use Of Local Parks

There were two kinds of variables used to describe vacations: nominal variables describing activities and locations of the vacations, and interval variables describing the time of year and number of days available for the vacations. Two separate analyses were carried out to establish relationships between the vacation behavior and park use, appropriate to the kinds of variables available. In the first analysis, the interval vacation variables were included along with information on summer camp attendance, frequencies of visits to parks, and household incomes. These variables were submitted to principal components analysis, with the results which appear in Table 32.

The set of variables included in the analysis was rather loosely correlated, as indicated by a low percentage of explanation for the analysis (61 per cent). In the first factor, summer camp participation was positively associated with visits to teen and children's parks and with a later mid-date of vacation. All of the variables loaded positively on the first factor, suggesting that some households were "outdoor enthusiasts" who were more likely than others to visit parks of all kinds and to take their vacations later in the summer when the weather would be better.

The second factor demonstrated a negative relationship

TABLE 32
FACTOR ANALYSIS OF VACATION AND PARK USE VARIABLES

Factor	Variables	Factor Loadings
I. Outdoor Enthusiast	mid-date of stay at summer camp	0.77
	number of days at summer camp	0.72
	teens' park visit frequencies	0.48
	mid-date of vacation	0.46
	children's park visit frequencies	0.41
	frequency of regional park visits	0.39
	income	0.33
	number of days on vacation	0.07
II. Vacations vs. Park Use	number of days on vacation	0.75
	mid-date of vacation	0.58
	income	0.51
	frequency of regional park visits	0.31
	number of days at summer camp	-0.16
	mid-date of stay at summer camp	-0.28
	teens' park visit frequencies	-0.39
	children's park visit frequencies	-0.57
III. Park Use vs. Summer Camp	teens' park visit frequencies	0.60
	children's park visit frequencies	0.54
	frequency of regional park visits	0.42
	income	0.24
	number of days on vacation	-0.05
	mid-date of vacation	-0.09
	mid-date of stay at summer camp	-0.39
	number of days at summer camp	-0.57

between park and summer camp use on the one hand, vs. vacation opportunities and income on the other hand. This was a second-order relationship since all of the variables had previously loaded positively on the first factor. In other words, within the "outdoor enthusiast" category were some households devoting more time and money to vacations, whereas others emphasized use of summer camps and local park opportunities.

The third factor distinguishes summer camp from park use. In other words, the third order relationship differentiates these two tendencies within one of the directions of the second factor.

Taking the three factors together, all of the variables describe an aspect of participation in outdoor recreation; but within this general context those with better vacation opportunities tended to be less likely to visit local parks frequently.

A second analysis made use of the chi-square method to identify relationships between high or low park visit frequencies and various kinds of vacations. Cross tabulations of activity choices with park visit frequencies appear in Table 33. How the vacation was spent during the year of the survey was not significantly related either to children's or to teens' park visit frequencies. Visits to regional, distinct from local parks were related to vacation activities at the 5 per cent level of confidence by the chi-square test. Unusually high rates of visits to regional parks were more common

TABLE 33
VACATION ACTIVITIES AND PARK USE^a

Vacation Activity Choices	Frequencies of Visits to Urban Parks											
	Children's park visit frequencies			Teens' park visit frequencies				Frequencies of household visits to regional parks				
	1	2	3	1	2	3	4	1	2	3	4	
touring	0	3	3	1	1	4	1	3	4	5	6	
cottage	4	4	3	0	1	1	0	4	9	2	0	
visiting	0	3	2	0	0	2	1	1	2	1	7	
camping	2	7	3	1	1	1	2	0	7	7	3	
stay home	0	3	0	1	0	2	0	0	1	1	2	
water-based	0	0	3	0	0	1	0	2	1	2	1	
Chi-square	15.2			9.0				27.3				
D.F.	10			15				15				
significance	N.S.			N.S.				5%				

^aSource: questionnaire survey of households.

TABLE 34
VACATION LOCATIONS AND PARK USE^b

	Frequencies of Visits to Urban Parks											
Vacation Location Choices	Children's park visit frequencies			Teens' park visit frequencies				Frequencies of household visits to regional parks				
	1	2	3	1	2	3	4	1	2	3	4	
Canada (gen.)	4	9	11	2	4	6	2	14	16	5	8	
Ottawa	0	3	1	1	0	2	0	0	1	3	0	
urb.Ont.oth.	1	0	1	0	0	1	0	0	0	0	2	
urb.Qué.	0	2	0	1	0	1	0	0	0	0	4	
rur.Ott-Hull	1	1	1	0	1	1	0	0	3	2	2	
Georgian Bay	1	0	0	0	0	0	0	1	0	1	0	
rur.Ont.oth.	1	7	3	1	1	3	0	1	10	1	3	
rur.Qué.	1	1	1	0	0	0	0	1	2	1	0	
Maritimes	0	0	1	0	0	0	0	2	0	2	1	
West.Canada	0	1	1	0	0	0	0	0	2	2	1	
Chi-square	16.7			not				51.7				
D.F.	18			computable				27				
significance	N.S.							1%				

^bSource: household questionnaire survey.

among "travelling" vacationists: those who engaged in touring and sightseeing, or visiting relatives and friends while on vacation.

Table 34 presents the cross tabulations between park visit frequencies and the geographic location of vacations in the year of the survey. Again, only visits to regional parks were significantly related to vacations (at the 1 per cent level of confidence). The households with high visit frequencies to regional parks were the only ones to visit other urban areas in Ontario or Quebec while on vacation.¹

The results of the chi-square analysis showed an apparent geographic scaling of park use and vacation behavior. Household vacations which involved travelling and visiting relatives closer to home were related to regional park visits. These vacations were intermediate on a locational scale. Most vacations were farther away from home and of course, local park visits took place closer to home. These results are interesting for the purpose of understanding general leisure patterns, even though the regional and farther distant patterns of vacation travel were not shown to be significantly related to local park use frequencies.

The two analyses, by principal components and by chi-square, both illustrate a gap between the leisure worlds of adults and children. Vacation choices were clearly a part of the adult world. The children concentrated their activi-

¹The number of vacations outside of Canada was too small to include them in the analysis.

ties in local neighborhood parks. The longer the time spent on vacations, the less use was made of local parks, and vice-versa. Somewhere intermediate between these two poles were various outdoor leisure activities at a regional geographic scale: visits to regional parks, time spent at summer camps, visits with relatives and friends in nearby cities.

The remainder of this chapter is concerned with the "children's world" of leisure as indicated by frequencies of visits to local parks. Vacations and visits to regional facilities were not directly related to children's park use behavior. The possibility remains open that other aspects of household leisure patterns, involving more routine activities closer to home, might be more closely related to the use of local parks.

Weekend Activities and Park Visits

The 15 variables selected to describe distinctive patterns of weekend outdoor recreational activities were included in a series of regressions with children's park visit frequencies as the dependent variable. Of the 15 variables, eight had some bearing on park visits: ice skating and skiing in winter; and swimming, camping, nature study, bicycling, horseback riding, and driving for pleasure in summer. The eight variables were resubmitted to regression along with income and distance.

Although income was shown in factor analysis (Table 32) to be unrelated to visits to any but regional parks, and distance was shown previously not to affect park visit frequencies, these two variables were considered indispensable in the interpretation of social and geographic influences on park use. Therefore they were reintroduced here and repeatedly in subsequent regression equations to confirm, without doubt, the independence of park visit frequencies from these two critical variables.

The results of the regression of eight weekend activity variables, income and distance on children's park visit frequencies are presented in Table 35. When the eight variables were considered together in a single equation, only three proved significant by t-test: ice skating, swimming, and camping.

TABLE 35

WEEKEND ACTIVITIES AND CHILDREN'S PARK VISITS^a

Variable	Coefficient	T	Partial r
winter ice skating ^b	0.99	5.4	.42
winter alpine skiing ^b	-0.29	-1.4	-.12
summer swimming ^b	0.43	2.1	.18
summer camping ^b	0.54	2.8	.24
summer nature study ^b	-0.36	-1.5	-.13
summer bicycling ^b	0.32	1.3	.11
summer horseback ^b	-0.12	-0.7	-.06
summer driving ^b	-0.39	-1.6	-.13
income	0.02	0.4	.03
distance	0.00	0.1	.00

Overall results: multiple $r = .59$; $r^2 = .30$; $F(10,133) = 7.2$

^aDependent variable: children's park visit frequencies

^bIndicates nominal variable

Daytime Leisure Activities and Park Visits

Ten of the daytime leisure activities listed in the household questionnaire produced sufficient responses to be retained after preliminary screening. These ten were the subject of a linkage analysis described previously. Since the number of variables was relatively small, all ten were included again in the regression on children's park visit frequencies. Income was included once more as an additional independent variable.

The regression results indicated that only two daytime leisure variables had a possibly significant relationship with park visit frequencies: neighborhood games such as hide-and-go-seek; and snow play such as building snow men or igloos. None of the other daytime activities, which included accompanying young children to the park, nor income was significantly related to the park visit frequencies of household children according to the t-test.

Neighborhood games and snow play were, of course, two of the list of activities suitable for elementary school and younger teen age groups. More surprising was the result that other daytime activities were not related to park visit frequencies. Use of play equipment in one's back yard was not related either positively or negatively to park visit frequencies, nor was accompanying young children to the park.

Television Viewing

The impact of television on leisure pursuits has been widely noted. Among adults, T.V. viewing was the single most time-consuming use of leisure hours, except for "visiting", in 1965 (Robinson, 1969, 76). This should be qualified in that white collar employed women and housewives spent more time eating than watching T.V., according to the research cited, and all classes of employed men spent more time watching T.V. than any other leisure activity, and figures were not presented for T.V. viewing habits of children. In any case, television viewing is of unquestionable importance in the allocation of the leisure time budgets of all groups in contemporary society.

Results of the regression of children's park visit frequencies on T.V. viewing hours are presented in Table 36. The variables income and distance were added to the regression to provide some interval measurements, and also to retest the previous conclusion, that neither income nor distance had a significant influence on park visit frequencies. The results again show the lack of such influence.

Two significant viewing periods of the total day's viewing opportunities are isolated by this preliminary regression. From 12:00 noon until 2:00 p.m., there is an apparent negative relationship between park visit frequencies and television viewing; from 4:00 p.m. until 6:00 p.m. a

TABLE 36
EFFECTS OF TELEVISION VIEWING HOURS ON CHILDREN'S
PARK VISIT FREQUENCIES

Variable	Coefficient	T	Partial r
^b T.V. 10:00-12:00 M.	.02	0.1	.01
^b T.V. 12:00- 2:00 P.M.	-.90	-2.5	-.21
^b T.V. 2:00- 4:00 P.M.	-.25	-0.8	-.07
^b T.V. 4:00- 6:00 P.M.	1.32	6.5	.49
^b T.V. 6:00- 8:00 P.M.	.20	1.0	.09
^b T.V. 8:00-10:00 P.M.	-.21	-1.0	-.09
^b T.V. 10:00-12:00 P.M.	-.14	-0.8	-.07
income	.03	0.7	.06
distance	-.00	-0.9	-.08

Overall results: multiple $r = .55$; $r^2 = .26$; $F(9,134) = 6.5$

^bIndicates nominal variable.

still stronger relationship appears in the positive direction. The interpretation of these relationships seems to be that some households watch T.V. in the afternoon and therefore the children may stay home in front of the T.V. rather than visit the park on some days; other households perhaps send their children to the park during the afternoon, and then turn the T.V. on when the children return from the park, between 4:00 and 6:00 p.m. If this interpretation is valid, then it cannot be asserted that television either does or does not detract from "wholesome" outdoor recreation such as visiting

a local park. It depends whether the T.V. is used as a substitute for going to the park, or whether it is used to complement park visits in the overall household program for keeping the children occupied. Apparently, watching T.V. from 4 to 6 p.m. and going to the local park are both reflections of some other underlying factors which encourage households to organize their use of time in this manner.

Other Social Characteristics in Relation to Park Use

A long series of regressions were run which tested virtually all the information available from the household questionnaire survey for its possible relevance to frequencies of children's visits to local parks. These visit frequencies were taken as the dependent variable on the basis that they stood for a set of interrelated variables, all of which indicated what was termed "hard core" usage of a park. The interrelated variables included the timing and duration of park visits, whether a repeat visit would be made later on the same visiting day, and the frequency of visits by the visitor to the park. Of these variables, only the frequency of park visits was available from the household survey results.

This portion of the study included a great deal of sifting and sorting of information, much of which would not be profitable to report in detail here. The following include the cases in which some positive results were obtained for the park use model of Chapter VIII.

Income and Distance

As before, income and distance were frequently included in the regression equations because of their importance in many other aspects of geographic and economic life. In most cases, the effects of these two variables were negligible. (Household income was correlated with children's park visits with a coefficient of only 0.05, distance with a coefficient of less than 0.01). However, it remained possible that in subsequent multiple regressions involving other variables, either income or distance might have an important effect in explaining residual variances.

Recreational Equipment and Language of Response

The equipment variables used to seek relationships with park visit frequencies were selected according to the linkage analysis of daily activities described above (Table 31). Also included in the regression were the language in which the questionnaire was completed, the daily activities "snow play" and "hide-and-go-seek", and two vacation variables: the number of days spent on vacation in the year of the survey, and the number of days spent by children away at summer camp the same year. (See Table 37) .

With this set of variables, the language of response to the questionnaire did not appear significant, nor did the vacation data, nor did almost anything else, except possession of a bicycle as a kind of recreational equipment. There are

TABLE 37

RECREATIONAL EQUIPMENT IN RELATION TO
CHILDREN'S PARK VISIT FREQUENCIES

Variable	Coefficient	T	Partial r
^b response in French	.23	1.0	.09
number of days on vacation	-.00	-0.7	-.06
number of days at summer camp	-.01	-0.9	-.08
^b neighborhood games (hide-and-seek)	.45	1.8	.16
^b snow play (build snow men, igloos)	.38	1.6	.14
<u>Equipment Variables</u>			
^b bicycle	.55	2.5	.21
^b car	.12	0.5	.05
^b back yard swing set	.22	0.9	.08
^b sleeping bag	.36	1.9	.16
^b bathing suit	-.42	-1.6	-.14
^b ice skates	.29	1.3	.11
^b toboggan or sled	.40	1.6	.14

Overall results: multiple $r = .66$; $r^2 = .38$; $F(12,131) = 8.4$

^bIndicates nominal variable.

several variables which might be interdependent and hence might account for the lack of explanatory power afforded by any one of them in the regression equation. For whatever reason, bicycle ownership stands out above them all as a significant explanatory variable.

The test of recreational equipment variables showed that the relationship between swing sets in the back yard and frequency of children's park visits was not only weak, but that it also tended to be in the positive direction. The conclusion of Dee and Liebman is therefore not supported either by the data on household activities or by the data on household equipment collected in the present survey. If a choice must be made between their study and the present one, it could be argued that the present data were more reliable since visit frequencies and household equipment and activities observations were made for the same households. In the Baltimore study, swing sets were counted in the areas around each park, so that there was no necessary connection between the use of playgrounds and the equipment owned by a given individual household.

With regard to the other kinds of recreational equipment inventoried in the household survey, it is of further interest to note that both swing sets and automobiles had the weakest of all the relationships with park visit frequencies, while sleeping bags, sleds and bathing suits were

almost significant by the T-test. Although neither sleeping bags nor sleds would be used in most local parks, their possession might indicate an "outdoors" orientation in a household which would tend to result in higher park visit frequencies. Possession of bathing suits appeared almost significant as well, but in the negative direction, even though wading pools were provided at each of the parks under study. Households interested in swimming apparently would go elsewhere if they could, leaving their children to visit the local park less regularly. These results were statistically weak, but they do lead one to conclude that a wide variety of equipment, not just the back yard swing set, may have some relationship with household decisions to visit or not to visit local parks.

Household Size and Age Composition

A regression considering the composition of households was run, with the number of household members, the number of members under age six, and the number age 6 to 12 among the independent variables. Also included were alternative play spaces: streets, sidewalks, back yards, vacant lots, and the Central Experimental Farm (a facility visited by many young children and their parents). The results of the regression are shown in Table 38.

The results of this regression are interesting in several ways. First, it may be noted that the "alternative" areas,

TABLE 38
HOUSEHOLD SIZE AND AGE COMPOSITION
AND VISIT FREQUENCIES

Variable	Coefficient	T	Partial r
^b Experimental Farm visits	.20	1.3	.11
number in household	.04	0.9	.08
number age 6-12 years	.46	5.4	.42
number under 6 years	-.12	-0.9	-.07
^b play on sidewalk	.23	1.1	.09
^b play in street	.49	2.5	.21
^b play in back yard	.67	3.8	.31
^b play in vacant lots	-.13	-0.6	-.05

Overall results: multiple $r = .74$; $r^2 = .52$; $F(8,135) = 20.6$

^bIndicates nominal variable.

including the Experimental Farm as well as sidewalks, streets, and back yards, are positively associated with park visit frequencies in every case (although not all of the relationships appear to be statistically significant). In other words, rather than competing with local parks, these areas appear to exercise a complementary influence; or possibly there are other characteristics of households which increase demands for play spaces of all kinds. This result corroborates the finding of Chapter VI concerning alternative areas.

It might be expected that larger household units would tend to use parks more because of possibly crowded living quarters. This was not verified to a significant degree by

the regression summarized in Table 38. Far more significant was the number of children age 6 to 12 in the household. Thus, if the size of the household membership was not a significant factor, on the other hand the number of children in this one age group was definitely a factor. It might seem on the surface that this would be a spurious correlation, since the question asked in the survey was specifically directed at the park visits of the 0-12 year-olds. There are two reasons why this relationship is not spurious. First, the dependent variable was the frequency of park visits, and thus the interpretation of the relationship is that, indeed, households which experience "crowding" in the sense of having larger numbers of children within this age group, tend to make more frequent use of the local park. Second, the results for the 0-5 year-old age group show an effect in the opposite direction (though not a statistically significant one): in regard to this younger group, a larger number of children seemed to reduce the visit frequency. Thus, it was not the size of the household in general nor even the total number of children in the household which acted to generate high visit frequencies to parks: it was specifically the number of children in the 6 to 12 year age group, that is, the number of elementary school age children, which produced this effect.

This and the other characteristics which affect children's park visit frequencies apparently result also in greater propensities to use so-called "alternative" open space play areas. In interpreting Table 38, it would be difficult to justify a conclusion that the act of using a street to play in, makes one more likely to visit the local park frequently; it is easier to assume simply that the two kinds of behavior are correlates, perhaps deriving from causes that are similar or the same. Adopting the latter interpretation, it is of immediate interest to note which kind of alternative area is used by this elementary school age population of active park enthusiasts. Streets and backyards recorded significantly high T values (the cautions noted earlier applying once again to these dichotomous variables), whereas sidewalks and vacant lots did not. In the suburban landscape of the newer subdivisions in municipal Ottawa, sidewalks were provided only along major streets, on the apparent assumption that all the suburbanites would travel in cars or on bicycles, for the traffic would be light enough so that the streets could serve the sidewalk function. Therefore, for many of the responding households, both vacant lots and sidewalks would be located farther from home than either back yards or streets. For such households, the tendency of the children to play in back yards or in the street would indicate that they simply stayed close to home.

On the other hand, sidewalks are ubiquitous in the older core areas of the city. If the younger children made regular use of sidewalks for play there, the effect would presumably still be strong enough to make this variable as significant as back yards and streets in relation to park visit frequencies. Therefore, it is reasonable to conclude from these results that young children apparently prefer yards and streets to sidewalks and vacant lots as play spaces. Perhaps, in general, one could say they prefer, or at least make more frequent use of rectangular spaces offering room to run around in, near the supervision either of parents or of park personnel. Perhaps sidewalks are the wrong shape, considering the other spaces which tend to be more heavily used. Perhaps supervision is important, because it is one essential difference between a vacant lot and either a park or a private yard. These conclusions seem reasonable to the author, who has two children in this age category, but they are not directly supported by evidence from the survey.

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Schools Attended and Language Spoken at Home

Any possible relationships between "ethnic" factors and frequencies of children's park visits were expected to be revealed by questionnaire data on whether children attended public or separate schools and on what language(s) was (were) spoken at home. The only significant relationships with park visit frequencies appeared for both public and separate school attendance (again demonstrating that the elementary school population contains the "hard core" of park visitors). None of the language groups seemed to be related significantly to visit frequencies, although there was a slight tendency for bilingual (French and English) households to visit parks less frequently and for "other European" language groups (other than English, French, bilingual or Italian) to visit more frequently. The net effect of type of school attended could not be determined in this regression, since the effects of the age composition of each household were not controlled. It is also possible, since this was a multiple regression, that differences in language groups were masked to some extent because of interrelationships between language and type of school attended. The hypothesis of a relationship between language group and park attendance cannot be completely abandoned because it was already verified by the park visitor data.

More Equipment and Leisure Variables

Several equipment variables had been excluded from consideration previously, because they did not rank in importance among the equipment categories identified in linkage analysis. There were other variables describing aspects of vacations, summer camp schedules, seasons of visits to regional parks, and visits to regional and provincial parks which had not previously been considered. No particular hypothesis was attached to any of these, but nevertheless a regression was run to test them for possible significance. The results of this regression are shown in Table 39 . A discovery was made by this process which would not have been made otherwise. It turned out that there was a significant relationship between household ownership of a baseball and bat and frequency of children's park visits! In subsequent tests, this variable continued to show up as the strongest among the equipment variables as a predictor of visit frequencies.

Another discovery resulting from this regression was the identification of particular regional parks which attracted visitors from households having high frequencies of visits to local parks: the Experimental Farm and the Gatineau. The other regional parks, Vincent Massey and Rockcliffe Park, apparently did not attract these visitors to a significant degree. Based on this result, it would

TABLE 39

REGRESSION OF OTHER EQUIPMENT AND LEISURE VARIABLES
ON CHILDREN'S PARK VISIT FREQUENCIES

Variable	Coefficient	T	Partial r
number of days on vacation	.00	0.3	.03
mid-date of vacation	-.01	-0.2	-.01
attended summer camp ^b	-.08	-0.3	-.03
number of days at summer camp	-.02	-1.5	-.14
mid-date of stay at summer camp	.20	1.2	.11
possess baseball and bat ^b	.68	2.5	.22
possess basketball ^b	.01	0.0	.00
possess tent ^b	.22	1.1	.10
possess fishing tackle ^b	.17	0.7	.07
possess rifle or shotgun ^b	.31	1.1	.10
possess hockey stick ^b	.43	1.5	.13
possess hockey uniform ^b	-.02	-0.1	-.01
possess skis ^b	-.05	-0.3	-.02
visit Experimental Farm ^b	.75	3.2	.28
visit the Gatineau Park ^b	-.44	-2.0	-.18
visit Rockcliffe Park ^b	-.10	-0.4	-.04
visit Vincent Massey Park ^b	.28	1.3	.12
visit regional park in winter ^b	-.16	-0.6	-.06
visit regional park in spring ^b	.01	0.0	.00
visit regional park in summer ^b	.22	1.0	.09
visit regional park in autumn ^b	-.18	-0.8	-.07
frequency of visits to regional pks ^b	-.07	-0.9	-.08
visit Mont Tremblant Park (Québec) ^b	.24	0.8	.07
visit La Vérendrye Park (Québec) ^b	-.55	-1.6	-.14
visit Algonquin Park (Ontario) ^b	-.03	-0.1	-.01
visit Adirondack Park (New York) ^b	-.36	-1.3	-.12

Overall results: multiple $r = .66$; $r^2 = .30$; $F(26,117) = 3.4$

^bIndicates nominal variable.

appear that the weakness of the relationship noted earlier, between visits to regional parks and children's park visits, might be strengthened by considering only the regional parks attractive to children.

Another "accidental" discovery resulted from the author's mistake in setting up a computer run on visit frequencies. It so happened that the mistake resulted in visits to the Experimental Farm being considered as the dependent variable, with household size and age composition, and use of areas such as streets, sidewalks, back yards and vacant lots entered as independent variables. This would not have been done intentionally, since whether a household visited the Experimental Farm or not constituted a dichotomous variable unsuited to use as a dependent variable. Nevertheless, it is interesting to note that the 6-12 year age group did not appear to be significantly related to visits to the Experimental Farm, but a negative tendency did exist such that households in which children played on sidewalks tended not to visit the Experimental Farm. Also, the size of the household was positively related to visits to the Experimental Farm to a "significant" degree. Because of these differences, it is clear that although the high frequency visitors to local parks may tend to be the same ones who visit the Experimental Farm, there were reasons for visiting the Experimental Farm which differed from reasons for visiting local parks. Although, as mentioned, one could not draw valid statistical

conclusions from this regression on a dichotomous dependent variable, it does seem reasonable to infer that the relationship between visiting the Experimental Farm and high local park visit frequencies was not spurious. Visits to such areas as the Experimental Farm and the Gatineau Park would appear to be aspects of a general leisure style which might indeed be related to one's propensity to visit local urban parks.

More Alternatives to Local Park Visits

In an open-ended question, responding households were asked to list alternative private or semi-public organizations or areas which provided similar recreational opportunities to the city parks system. A long list of such opportunities was compiled for use in coding these responses, and the more frequent among them were introduced as independent variables of possible significance in the frequency of children's park visits. Also, in the same regression, attendance at sports events as spectators was considered, as were the ages of household members.

Not a single variable in the whole list proved significant. This probably reflects, again, the "spreading out" effect of using many interrelated variables in the same equation. Still, the result is surprising. There was no marked tendency for households who "only use parks for outdoor recreation" to be frequent park visitors, indeed the slight relationship which did exist was negative in sign.

Frequency of park visits and participation in parish activities were almost perfectly independent of one another. Only the YMCA seemed to rival the parks system to anywhere near a significant degree. Among spectator sports, basketball and hockey approached, but did not reach, a significant level of influence on park visit frequencies.

Conclusion to Part B

In the foregoing chapters, the use of four selected parks and alternative play spaces has been described and analyzed with respect to accessibility, household leisure patterns and other social characteristics of sample households..

The analyses have shown that the use of three out of the four selected local parks was affected by accessibility, but that the use of parks in general was not influenced by the accessibility of sample households to the parks. Apparently, accessibility influenced the choice of which park to visit, but the overall number of visits to be made depended upon other factors.

In a search for such additional factors of park demand, the leisure patterns of respondent households were considered. Vacation choices turned out to be unrelated to frequencies of local park visits. Among weekend leisure activities, ice skating, swimming and camping were related to higher frequencies of visits to local parks, even though the latter was

not an available activity within the parks themselves.

Among daytime leisure activities, neighborhood games such as hide-and-go-seek and snow play in the winter were positively associated with high park visit frequencies. Frequent park visitors tended not to watch television between 12:00 and 2:00 p.m., but were more likely than non-visitors to watch television from 4:00 to 6:00 p.m.

Various other characteristics of households were also considered in relation to park visit frequencies. Income was consistently found not to be significant. The kinds of recreational equipment associated with local park use were relatively inexpensive: bicycles and baseball bats. A household with a larger number of children between the ages of six and 12 was more likely to send them to the park every day, than a household with fewer of them. Otherwise, the size of the household was not related to its frequency of visits to local parks, except for visits to the Experimental Farm by larger families.

The list of influential variables was arrived at piecemeal by regressions covering particular themes. It remains to put all the explanatory variables together in a model of park use. Not yet considered are differences in park use which derive from the different neighborhood settings being investigated. Once the characteristics of in-

dividual households are accounted for, remaining differences between neighborhood areas presumably reflect more general attributes of the local geographic environment. Also, the regressions included up to this point have used the frequency of visits to children's parks as the dependent variable. The hard core usage of parks included both elementary school age and secondary school, or teen-age visitors. The model to be developed for children's park visits will be tested and modified with respect to teen park visit frequencies.

Part C of the dissertation also includes a second chapter. The empirical results, presented in the form of models of park use, are presented in Chapter VIII. The interpretation of the results as they apply to general issues of urban park system planning and management are the topic of Chapter IX. The author's personal viewpoint on the broader implication of these issues is contained in a brief Epilogue.

PART C

CONCLUSION

CHAPTER VIII

PRELIMINARY CONCLUSION: STATISTICAL MODELS TO EXPLAIN PARK VISIT FREQUENCIES

The use of local neighborhood parks in the four selected study areas of Ottawa-Hull can be fairly well predicted or "explained" by taking into account the various characteristics and behaviors of households shown to be related to such use.

The major limitation of such a model is that, even though it be mathematically sound and provide a thorough explanation of observed park use frequencies, it speaks to only half of the organizing question posed at the outset of the study: "Why are there so often no parks where the people are and no people where the parks are?" The absence of most people from most parks most of the time is a cultural problem which is inevitably ignored in any statistical analysis which takes existing patterns of park use as the variable to be explained.

The limitation does not apply to a broader interpretation of the social and land use implications of observed park use. Such an interpretation is presented in Chapter IX as a general conclusion to this dissertation. The present chapter is so limited, however, as it deals exclusively with the explanation of observed patterns of park use.

A Model of Park Demand

A simple model for analyzing the demand for a park facility was suggested by Harold Hotelling in the late 1940's and subsequently elaborated (Clawson, 1958; Clawson and Knetsch, 1966). It is often presented in the form of a graph in which the vertical axis is a per capita rate of visitation to a park, and the horizontal axis measures the cost of a visit at various distances away from the park. Such graphs were used in the analysis of park visits in Chapter V of this dissertation.

The graphic form of the Hotelling-Clawson model may readily be translated into a simple mathematical formula such as the following:

$$V = c D^{-n} \quad (1)$$

where V is the number of visits per capita per time period from a given source area to a given recreation area,

D is the distance-cost to reach the recreation area from the source area,

n is the exponent of distance, equivalent to the "distance-elasticity of demand" for the recreation area, and

c is the constant reflecting both the attractiveness of the recreation area and the emissiveness of the source area.

The formula, or its graphic equivalent, is a demand schedule in the conventional economic sense. It predicts the amount of the "good" (recreation area visits) that will be purchased if available at a given "price"

(cost-distance). It is analogous to the "gravity models" often encountered in geographic literature, but logically different: "The critical point is that gravitational attraction works both ways, each body attracting the other. . . Not so with recreation travel." (Wolfe, 1970, 85.)

For purposes of statistical analysis, it is convenient to modify the mathematical form of the model into a regression equation. It is generally necessary to take the logarithm of visit rates in order to fit observations to a straight regression line. In logarithmic form, equation (1) becomes:

$$\log V = \log c - \eta \log D + \epsilon \quad (2)$$

where ϵ is the error term.

Equation (2) is the mathematical equivalent of plotting a graph on logarithmic scales (for example, Clawson and Knetsch, 1966, 73). In this form, the equation has the advantage that the "elasticity" of demand may be read directly from the slope of the regression line (η). Also, the "attractiveness" of the recreation area may be read directly as the intercept or base constant of the regression equation $(\log c)^1$.

The logarithmic form of the equation, (Equation (2) , brings one through Chapter V of the dissertation, the analysis of park accessibility in relation to park visit rates. The other variables assumed to have effects on visits to a given park, or to parks in general, would be subsumed under

¹Although there is no theoretical intercept in a logarithmic equation, in practice a point is reached at which

the constant term of the equation ($\log c$). Assuming mutual independence of effects of such variables as park type, social characteristics, and the weather, they can be included specifically in the equation by multiplying them together, or in other words by adding the logarithms. It is therefore convenient to expand Equation (2) to allow for any number of desired variables affecting the overall "attractiveness" of the park--its physical qualities, the weather, and attributes of the population of potential users making them more or less desirous to use the facility. The equation becomes

$$\log V = \log b_1 + \log b_2 + \dots + \log b_n - n \log D + \epsilon \quad (3)$$

$$\text{where } \log b_1 + \log b_2 + \dots + \log b_n = \log c.$$

Although incorporating numerous other variables, the equation remains a simple linear regression of the visit rate on distance when presented in the form of Equation (3). There are two limitations to this study. First, it has been shown that the visit frequencies of household members to local parks in general, were not affected to a significant degree by their distance from a particular park. When the distance term drops out of the equation, it becomes a simple product of conditional probabilities rather than a regression equation. Second, many of the variables to be included in the equation were binomials. Either to multiply binomials or to take their logarithms is meaningless.

one is so close to the park that no further estimate of visit rate is possible.

Considering these limitations, it was necessary to modify the form of the regression still further, by assigning coefficients to each of the explanatory variables, thereby making the equation a multiple regression. As a multiple regression equation, the mathematical model used in this study to explain park visit frequencies is no longer a model of park demand in the sense of equations (1), (2), and (3). The theoretical possibility still exists that the results obtained in this study can be used as a basis for developing models of urban park demand that will incorporate explicit measures of such factors of the attractiveness of parks as park type, user type, and the weather.

Thus, although an explicit model of park demand is not feasible in this study, it is nevertheless possible to develop an explanatory model of park visit frequencies using a multiple regression equation. Such an explanatory model contributes to the eventual formulation of an economic model of local park demand in that specific variables are identified which contribute to greater or lesser propensities to visit local parks.

Two different measures of park visit frequencies were obtained through the household survey for visits to local parks: visits by children, and visits by teen-agers from respondent households. The information on these and other variables was obtained in four different residential areas.

The variables associated with high visit frequencies were different for each age group and were also different in each community surveyed.

Children's Park Visits

The explanation of children's park visits is of primary importance to models of park use, since the six to 12-year-olds were the dominant age group in all four selected parks. When grouped together in the same regression equation, not all of the variables identified in Chapter VII as being individually related to children's park visits, turned out to be independent of other variables enough to be retained in the final analysis. Stepwise multiple regression was used to sort out the most significant explanatory variables. The results of this regression were

$$V_c = .17 + .44N_c + .41B + .71H + .58T_1 + .81S \\ - .64T_c + .37C + .00D + .04I + \epsilon \quad (4)$$

where

- V_c is the frequency of children's park visits,
- N_c is the number of children age 6-12 in the household,
- B is the possession of a baseball and bat,
- H is participation in neighborhood games such as hide-and-go-seek,
- T_1 is watching television from 4:00 to 6:00 p.m.,
- S is attending basketball games as a spectator,
- T_2 is watching television from noon to 2:00 p.m.,
- C is camping on summer weekends,
- D is distance from the selected park,
- I is income

The overall explanation of children's park visits provided by this equation was 62 per cent, with an F ratio of 29:1. This highly significant ratio had been still higher before including income and distance in the equation.

The list of variables included in the equation suggests an orientation to outdoor activities in general (camping, hide-and-go-seek), to sports (possession of baseball and bat, attendance at basketball games), and to activities popular among children (television viewing from 4:00 to 6:00 p.m., but not from noon to 2:00 p.m.).

Because the variables used in the equation were mostly dichotomous, another check was made by chi-square to find out whether each variable was individually related to frequencies of children's park visits to a significant degree. The check resulted in rejecting the null hypothesis for all of the explanatory variables except basketball games and television viewing from noon to 2:00 p.m.

A simpler regression equation, leaving out the variables basketball games and mid-day television viewing, accounts for 60 per cent of the variance in children's park visits, with an F ratio of 40:1. The simplified equation is:

$$V_c = .10 + .41N_c + .59B + .70H + .49T + .37C + \epsilon \quad (5).$$

This analysis of children's park visits reinforces the earlier conclusion of a separate "children's world" of leisure, as indicated by these household activities, which was not significantly related to any social characteristics of household adults, except insofar as they may have participated with the children in weekend camping expeditions.

Other than variables describing leisure activities, the only social characteristic with a significant bearing on frequencies of park visits was the number of children in the six to 12 year-old age group. There are two possible interpretations of the significance of this variable. Either households with more children tended to send them out of the house more often, or the children took turns visiting the park so that, from a large family, there would be at least one park visitor every day. From a plot of residuals for this variable, it appears that there was a tendency for the frequency of visits to be overestimated in households with more children. Therefore, the visits by each child were not totally independent of visits by the other children in the household. This confirms the interpretation that households with more children in the six to 12 year-old age range tended to send them to parks more frequently than did the smaller households.

Children's Park Visits by Neighborhood

Separate regressions were run for the responses individually in each neighborhood where the survey was conducted. Also, the two "urban core" neighborhoods were combined as were the two "suburban" neighborhoods to explore differences which might exist between the two kinds of geographic areas. A different "mixture" of variables turned out to be significant in each different situation.

McNabb

In the zone of influence of McNabb Park, six variables were significantly related to frequencies of children's park visits: number of children age six to 12, attending basketball games, and weekend camping were important in this area, in conformity with the overall results. Variables not significant for all neighborhoods, but important in the McNabb area, included a positive effect from public school attendance and a negative one from weekend bicycling and from attendance at hockey games as a spectator (Table 40).

TABLE 40
VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
IN THE McNABB AREA

Variable Name	Regression Coefficient	T	Partial r
weekend camping	.83	2.7	.57
weekend bicycling	-.95	-2.2	-.49
no. days summer camp	-.01	-1.1	-.28
neighborhood games	.11	0.2	.06
baseball and bat	.65	1.7	.39
no. 6-12 years	.45	2.8	.58
no. 0-5 years	.75	1.3	.33
attend public school	.96	2.1	.47
attend hockey games	-.67	-2.1	-.47
attend basketball games	2.30	2.5	.55
watch television 12-2	-1.44	-1.6	-.38
watch television 4-6	.71	1.6	.38
Overall results: multiple $r = .93$; $r^2 = .86$; $F(12,15) = 7.6$			

Anglesea

The number of children age six to 12 was also important in explaining visit frequencies to Anglesea Square. Public school students were more likely than separate school students to be frequent park visitors in this predominantly French Catholic area. There was a negative relationship between attending basketball games and park visit frequencies, the opposite of the relationship observed for the sample as a whole (Table 41).

TABLE 41
VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
IN THE ANGLESEA AREA

Variable Name	Regression Coefficient	T	Partial r
weekend camping	-.19	-0.61	-.12
weekend bicycling	-.03	-0.08	-.02
no. days summer camp	-.66	-1.98	-.37
neighborhood games	.43	0.82	.16
baseball and bat	.53	1.15	.22
no. 6-12 years	1.14	3.33	.55
no. 0-5 years	-.21	-0.55	-.11
attend public school	7.35	2.81	.48
attend hockey games	.34	0.83	.16
attend basketball games	-5.05	-2.14	-.39
watch television 12-2	-.50	-1.32	-.26
watch television 4-6	.19	0.56	.11
Overall results: multiple $r = .86$; $r^2 = .74$; $F(12,25) = 6.0$			

Urban Core Areas

The significant variables associated with park visit frequencies in "inner city" or "urban core" situations were sought by combining the samples from the two areas of this type: McNabb and Anglesea. Three variables were significant: the number of children, and the two television variables. This result is both surprising and interesting, since television viewing habits were not significant in either area individually. The combination of the two samples required that the explanation of park visits would be based on elements shared in common in two different cultural areas. The "common denominator" turned out to be television (Table 42).

TABLE 42
VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
IN URBAN CORE AREAS
(McNABB AND ANGLESEA SAMPLES COMBINED)

Variable Name	Regression Coefficient	T	Partial r
weekend camping	0.33	1.53	.21
weekend bicycling	-0.03	-0.10	-.01
no. days summer camp	-0.02	-1.57	-.21
neighborhood games	0.47	1.46	.20
baseball and bat	0.45	1.55	.21
no. 6-12 years	0.39	3.44	.43
no. 0-5 years	0.09	0.57	.08
attend public school	0.55	1.54	.21
attend hockey games	-0.19	-0.78	-.11
attend basketball games	1.01	1.65	.22
watch television 12-2	-0.78	-2.46	-.32
watch television 4-6	0.61	2.62	.34
Overall results: multiple $r = .82$; $r^2 = .67$; $F(12,53) = 9.1$			

Agincourt

Only two variables proved significant in explaining visits to Agincourt Park: the number of children in the six to 12 age bracket, and participation in neighborhood games such as hide-and-go-seek (Table 43).

TABLE 43
VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
IN THE AGINCOURT AREA

Variable Name	Regression Coefficient	T	Partial r
weekend camping	0.21	0.74	0.12
weekend bicycling	-0.34	-1.06	-0.17
no. days summer camp	0.00	0.23	0.04
neighborhood games	0.91	2.90	0.43
baseball and bat	0.38	1.26	0.20
no. 6-12 years	0.58	3.85	0.53
no. 0-5 years	0.20	0.88	0.14
attend public school	0.03	0.11	0.02
attend hockey games	0.33	1.37	0.22
attend basketball games	0.79	1.79	0.28
watch television 12-2	-0.25	-0.42	-0.07
watch television 4-6	0.44	1.47	0.23
Overall results: multiple $r = .83$; $r^2 = .69$; $F(12,38) = 6.9$			

Hawthorne

Visits to Hawthorne Park could not be explained by any of the variables tested, to a significant degree. The standard variables which were used in the regressions for all four neighborhoods produced a coefficient of determination of 59 per cent for the overall regression results,

nearly as high as the explanation provided for all of the areas taken together (Equation 5). However, the standard error of estimate in the case of Hawthorne Park visits was approximately twice that obtained for the other three neighborhood samples (Table 44).

TABLE 44
VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
IN HAWTHORNE MEADOWS

Variable Name	Regression Coefficient	T	Partial r
weekend camping	0.34	0.46	.17
weekend bicycling	0.74	0.72	.26
no. days summer camp	0.02	0.29	.11
neighborhood games	0.41	0.36	.14
baseball and bat	0.30	0.45	.17
no. 6-12 years	0.60	1.55	.50
no. 0-5 years	-0.02	-0.03	-.01
attend public school	-0.17	-0.20	-.07
attend hockey games	0.26	0.29	.11
watch television 12-2	-0.41	-0.26	-.10
watch television 4-6	-0.00	-0.00	-.00
Overall results: multiple $r = .77$; $r^2 = .59$; $F(11,7) = 0.9$			

Suburban Areas

The results for the two suburban areas taken together were the same as for Agincourt Park alone: two variables were significant, the number of children and their participation in neighborhood games (Table 45).

TABLE 45
 VARIABLES RELATED TO CHILDREN'S VISIT FREQUENCIES
 IN SUBURBAN AREAS
 (AGINCOURT AND HAWTHORNE AREA SAMPLES COMBINED)

Variable Name	Regression Coefficient	T	Partial r
weekend camping	0.37	1.65	.21
weekend bicycling	-0.02	-0.07	-.01
no. days summer camp	-0.00	-0.08	-.01
neighborhood games	0.86	3.17	.39
baseball and bat	0.31	1.30	.17
no. 6-12 years	0.55	4.59	.52
no. 0-5 years	0.12	0.57	.08
attend public school	-0.15	-0.63	-.08
attend hockey games	0.39	1.82	.23
attend basketball games	0.67	1.49	.19
watch television 12-2	-0.41	-0.87	-.11
watch television 4-6	0.39	1.55	.20
Overall results: multiple $r = .81$; $r^2 = .64$; $F(12,57) = 8.6$			

Neighborhood Comparisons

One variable above all explained the visit frequencies of children in the survey: the number of children in the household. Other than this, there were various contributing factors depending upon the neighborhood situation of the parks.

One difference among neighborhoods not previously mentioned was in the average frequencies of visits in each neighborhood sample: from a high of 1.68 in Hawthorne Meadows, to 1.11 and 0.98 respectively in Centre-Town and Agincourt, to a low of 0.66 in Basse-Ville. These average figures are surprising in that they contradict the common idea that heavier use is made of parks in urban core neighborhoods. Differences in the intensity of use of the four selected parks were not systematically investigated in this study. However, based on the park visit frequency data of the household survey, there was, if anything, a tendency toward less use of parks in the urban core areas. If actual park use intensity is greater in such areas, it cannot be explained by household preferences, but must be the result of other factors such as population density, especially the density of children and the number and location of available facilities.

In addition to the sizes of young families and differences

in crowding and availability of facilities between the urban core and suburban areas, "cultural" differences did exist in the variables related to park visit frequencies in the four neighborhood areas. Some of the differences are difficult to explain. Why, for example, did those who attended basketball games from Basse-Ville tend to be infrequent park visitors, whereas those who attended hockey games in Centre-Town visited parks less and those who attended basketball games visited parks more? Why did public school attenders visit parks more frequently than others both in Basse-Ville and in Centre-Town, and yet when both areas were combined this relationship lost its statistical significance? Why were the television viewing patterns more important in the core neighborhoods than in the suburban areas in explaining park visit frequencies? These and the other contrasts that appear in the different results for each neighborhood area certainly stimulate one's imagination about possible cultural differences, but in themselves they do not provide a satisfying description of the behavioral differences among the neighborhoods, much less of the cultural basis that would explain such differences in behavior.

Teen Park Visits

A variable screening procedure similar to that used for the younger children's park visits (Chapter VII) was

used to identify household characteristics closely related to the park visit frequencies of teen-agers, those from 13 to 18 years of age. The theme of results from the analysis of children's park visits was the isolation of the children's leisure world from the adult world. The results of the analysis of teen park visits can all be interpreted within the theme of progressive socialization of teen-agers to the socially differentiated world in which adults pursue their leisure interests.

After the most influential variables were selected, they were submitted to stepwise multiple regression resulting in the following equation:

$$V_t = -.12 + .78N_t + .50P + .21V_c + .48V - .33NSN - .00D - .56TN + .48C + .08I + .34DG + \epsilon \quad (6)$$

where V_t = frequency of visits by teen-agers,
 N_t = number of teen-agers in the household,
 P = public school attendance,
 V_c = frequency of children's park visits from the same household

V = use of vacant lots as play spaces,
 SN = snow play such as building igloos or snowmen,

D = distance to the selected park,
 TN = possession of a tent,

C = weekend camping,
 I = household income,

DG = walking a dog, and
 ϵ = an error term.

The equation produced 59 per cent explanation of the observed differences in teen park visit frequencies, with an F ratio of 19:1.

As with children's park visits, the variables influencing teen park visits were largely dichotomous. A chi-square check on each variable failed to show that distance, income, or dog walking were significantly related to the dependent variable.

Excluding the variables distance, income and dog walking, the equation becomes simplified:

$$V_t = .05 + .78N_t + .56P + .21V_c + .47V - .34SN \quad (7) \\ - .44TN + .42C + \epsilon$$

This equation still explains 57 per cent of visit frequency differences, with a higher F ratio (26:1).

The results of the regression of teen park visits include more social characteristics of a non-leisure kind: public school attendance, distance, and income. The leisure behaviors included in the equation also are of a different quality from those in the children's equation.

Number of 13 to 18-year-olds

As with the younger children, the teen-agers tended to visit local parks more frequently if there were more of them in the household. The plot of residuals against this

variable also showed the same pattern, which for the children's visits was interpreted to mean that the different household members in the given age group did not make their decisions independently of each other. In both cases, it would seem that larger families were more prone to make use of local parks.

Public School Attendance

After the number of teens living in a household, the next most important variable was whether or not they attended public schools. This effect was considerably stronger among the teens than was the case among the younger children, suggesting a progressive "socialization" or at least specialization of park visiting functions as the children grow older. This theme is evident in relation to other variables as well.

Frequency of Children's Park Visits

The park visitor survey demonstrated that many teenagers accompanied younger brothers, sisters, or neighbors' children to the park as a household duty, or for hire. Therefore, one can justify the claim that a high frequency of children's park visits in many households could encourage higher visit frequencies among the teens in such households.

Use of Vacant Lots

Whereas the younger children tended to play in back yards or in the street, teens would congregate on sidewalks and in vacant lots. Presumably the sidewalk gatherings

would constitute a social function, while vacant lots might accomodate sports and related activities. In any case, it was quite interesting to note this fundamental difference in choices of alternative play areas between the two age groups. The teens, being older, were more free to travel some distance from home, and to get along without adult supervision.

Of the two kinds of areas used by teen-agers, the stronger relationship was that between use of vacant lots and parks. Again the relationship was in the positive direction; rather than competing with parks, the vacant lots seemed to complement them, since the lots were used by the more frequent park visitors.

Snow Play

A possible link between the younger children and teen-agers was the significance for teens of snow play. This does not in itself seem a remarkable finding, except that, of the entire list of weekend and daily recreation activities, this one variable turned out to be of greatest significance. The effect of "snow play" was in the negative direction. If the other variables affecting teen park visits reflect a progressive socialization toward criteria prevalent in the adult world, might it be that this seemingly minor variable could indicate cases of less rapid socialization, hence less willingness to mix with peers in a public place

such as the local park?

Distance

The variable distance entered at an earlier stage for teens than it had for younger children, and with greater statistical significance. Again the phenomenon of socialization may be observed, since there is a progressive increase in the "economic rationality" of park visit frequencies among teen-agers as distinct from the comparative "irrationality" of visits by younger children. Countless studies of adult recreation behavior have demonstrated that the influence of distance is very prevalent in the adult world.

Tent Equipment and Weekend Camping

The next two variables in the equation were so closely related that it seems reasonable to discuss them together. The obvious question is, why should possession of tenting equipment have a negative impact on park visit frequencies, whereas weekend camping as a household activity had a positive effect?

The result was not anticipated, and therefore, no questions were posed in the questionnaire to find out what essential difference might exist between those who owned tents and those who went camping on weekends. One possible explanation is that, actually, two distinct kinds of activity are involved. Most people who go "camping" on weekends

nowadays, do so in recreation vehicles designed to provide the comforts of home in the wilderness. The possession of a tent might indicate the less prevalent type of camper who prefers to "rough it", without standard household amenities. If this interpretation is a valid one, then the regression results indicate that it was the "softer" type of mechanized camping household which produces teen-agers with high park visit frequencies. Those who prefer the rigors of more primitive camping apparently were not satisfied by the opportunities provided in local parks.

A second possible interpretation is the difference between family camping and peer group camping. Presumably there might be fewer families who camp together in tents, whereas teens might be more likely to use this form of accomodation if they were on weekend expeditions away from their families.

Income

Progressive socialization is still further apparent in the fact that the income variable is positively related to higher teen park visit frequencies. Apparently, the youth of less affluent households tend to stay home from the parks more as they reach teen-age. This possibly reflects their need to earn money as soon as they are old enough to do so. Some support for this suggestion was given by the details of "itineraries" among those park visitors who were

not going straight back and forth from home to the park. Some of the teen-agers interviewed were on their way to or from work. Presumably there were others who never came to the park if it was not on their way home.

Summary

Simpler models are, of course, to be preferred, provided that they convey substantially the same degree of explanation of the dependent variables. Two such simple models were derived in this chapter.

Children's park visit frequencies were explained by the number of children in a household, possession of a baseball and bat, joining in hide-and-go-seek, watching television in the late afternoon, and going camping on weekends (Equation 5).

Teen park visit frequencies were explained by the number of teens in a household, public school attendance, park visits by younger children in the household, use of vacant lots in the neighborhood, and going camping on weekends, but not engaging in snow play or owning a tent (Equation 7).

With regard to both groups of park visitors, the amount of variation in visit frequencies that could not be explained by the independent variables was about 40 per cent. Neither

income nor distance contributed substantially to the explanation of different visit rates in either case. Higher percentages of explanation were possible in each neighborhood considered individually. Different leisure patterns were evident from one area to another, as well as between "urban core" and "suburban" neighborhoods. Average visit frequencies were higher in suburban than in core neighborhoods, where daytime television viewing appeared to be a significant deterrent to park visits in some households. However, the cultural differences which were shown to exist among neighborhood areas could not readily be explained on the basis of the survey results.

Finally, the models of park visit frequencies presented in this chapter cannot be considered models of park demand in the economic sense. A model of demand would have to be based on distance or some other measure of the cost of a visit. Distance was not significantly related to overall park visit frequencies among children, and only slightly related, if at all, to differences in park visits among teen-agers. Furthermore, an economic model of park demand could consider only distance or cost as the independent variable, while the other factors in the situation would be assumed to affect only the zero-price or zero-distance intercept of demand.

In other words, although some specific variables were identified in the regression analysis, and the comparison

of different neighborhoods also supported the existence of significant cultural differences in the use of local parks, it would be premature to draw any conclusions regarding differences in demand for local parks among various segments of the population.

The interpretation of demand is necessarily based on intuition at the present time, although the patterns of use and the variables related to local park use are helpful as a guide in making such an interpretation. The final chapter to follow is based on the empirical results of this study, but it also includes interpretations which go beyond the immediate limitations of the data.

CHAPTER IX

GENERAL CONCLUSION: PERSPECTIVE ON THE USE OF URBAN PARKS IN OTTAWA-HULL

Specific conclusions concerning the variables influencing urban parks use in the four study areas have been presented in the context of the regression analysis of Chapter VIII. The purpose of the present chapter is to interpret these and other specific findings in light of the more general questions raised at the outset of the study.

The essential question posed at the outset was that phrased by Jane Jacobs: "Why are there so often no people where the parks are and no parks where the people are?" Various refinements and extensions of this question were noted based on the author's interests and contributions from existing literature. The factors of urban parks use and disuse were hypothesized to include park types, park use patterns, leisure patterns and other characteristics of potential visitors, and accessibility. The analysis of park use was pursued in depth in four small areas, where it was also possible to observe and describe actual park uses in detail.

Parks Without People

The description of urban parks use is intimately related to the question of park functions and park types. Following the present study, one can conclude that more research is needed to establish behaviorally meaningful categories of park functions, and that the existence of distinctive park types which presumably would exhibit particular recreational functions is by no means assured. The descriptive groundwork of the research subject of urban parks use has yet to be laid, and to this extent any more "theoretical" conclusions are premature.

Recreational Functions of Parks

A finding of the present study which is also supported by other research and comments in the literature, was that the urban parks of Ottawa-Hull provided opportunities for a relatively small number of distinctive recreational functions, including the playground function, sports and other activities commonly enjoyed by teen-agers, and a general leisure function. However, the three functions could not be clearly applied to any given recreational park, and when the attempt was made to group park user activities together into functional patterns, using the results of the park user survey, the results included other functions than these three, and they were not consistent from one park to another.

The recreational functions evident in the park user survey included child care and "other activities", neither of which could be reconciled with the previously adduced factors of equipment provision. However, this is entirely consistent with the previous findings, in the sense that no special equipment was provided for these functions: in the case of child care, the relevant equipment was the playground equipment used by the children, while the "other" activity group indicated, according to the interpretation suggested in Chapter V, precisely the lack of facilities or opportunities suited to the park visitors in question, who therefore lacked anything to do in the park except "bum around". This is not to say that some equipment ought not to be provided that would enhance these functions. It is a loss to a city playground if benches are not provided for adults who might come to care for their children if it were comfortable to do so. As mentioned earlier, the overwhelming majority of children visiting parks did so without adult supervision, thereby increasing the burden of park personnel. The atmosphere of a children's park is dignified and made more safe and secure when adults are present. The apparent relationship found in Chapter V (Table 19), between child care and low frequencies of park visits is perhaps explained to a large extent by the lack of facilities in the parks to attract and accomodate parents, nursemaids, or baby-sitters.

There is a less obvious solution to the problem of providing facilities for those engaging in "other" activities since this function appears to be so nebulous. The study indicated numerous possibilities which might be explored. The "other" activity participants tended to be French, male, on bicycles and, in one park, to be teenagers. Males also tended to be associated more with sports activities in several parks, so presumably at least part of the "other" user category includes males not interested in sports as such. They were on bicycles and bicycle racks were unrelated to the kinds of equipment used for particular park activities as identified in the analysis of park equipment variables of Chapter IV. One possibility would be to develop bicycle paths as a kind of park facility that would appeal to a part of the group of "other" users. The fact that those on bicycles who did "other" activities tended to speak French in parks where the majority spoke English, might indicate that a part of the problem of "other" users might go deeper than just a lack of suitable facilities.

Another obvious improvement in park facilities would be to respond to the most frequent comment of park users when asked how the existing park facilities could be improved. There was virtual unanimity in calling for "deeper pools" in the four parks where the survey was conducted. The present wading pools obviously limit the sizes of the children who can make appropriate use of them. The larger children tended to use them destructively, if at all, for pushing each other

into the pools with their clothes on. Teens and young adults could be expected to flock to local parks if more ample swimming facilities were provided; and those already visiting the parks would be provided with an opportunity for recreation of a kind formerly available only in large shoreline beach parks.

The activities clustered around swimming corresponded fairly well to the playground function derived in the parks equipment analysis. The "teen-sport" function of the equipment analysis was subdivided into a sociability and a sports cluster in the analysis of park user activities, which gives credence to the compound nature of this function. The "leisure" function of the equipment analysis might at least include the "child care" and "other" activity clusters found in the park user survey, although none of the four parks where surveys were conducted actually had significant amounts of leisure use equipment.

Of all the functions, clearly the existing hard core was the use of wading pools and playgrounds by children in the six to 12 age group. The pre-school age children were not frequent park visitors, and the teen-agers represented a small proportion of total visitors. Young adults, older adults and retired people were almost totally absent from the four park areas. Such use patterns reflect a common cultural attitude, among both French and English Canadians,

that local parks are for children. The attitude fosters policies of equipment provision and park management in general which reflect a narrow view of the role of parks in urban society, with the result that virtually everyone, except those in the 6-12 age group, is under-served if not unwelcome in local parks, most of the time.

Recreational Dysfunctions of Parks

Whether one analyzes the equipment available in parks, or the activities of park users, the insights to be gained into existing and potential recreational functions of urban parks are limited to the status quo. The household survey provided large amounts of information on other forms of outdoor recreational activity, most of which proved to be unrelated to the existing system; one might almost say the system is substantially irrelevant. Moreover, to the extent that bringing the population together in recreational settings where all can participate is a desirable goal, the typical playground area can be viewed as dysfunctional in that it isolates the children, and therefore fosters the development of urban recreational patterns emphasizing differences between people, rather than their common humanity and sense of unity.

A particularly advanced form of recreational dysfunction is the organized sports phenomenon which dominates

much of the area, though less of the use of urban parks. In this study, those who engaged in sports tended to be very regular in attendance, but tended not to engage in other activities which were available in the same parks. They were isolated, both from the majority of other park users, and from the majority of other park uses. The sports activists, furthermore, were male teen-agers on the whole, a group also identified with "other" activities in at least one park.

Competition is a value about which different people may disagree. The opinion has recently been advanced that competition is both a symptom, and a cause of social malaise (Crew, 1973, 72). But, regardless of whether or not some would condone competition as a healthy and desirable element in park activities, there is no reason at all why competitive sports should be the only recreational function available to teen-agers or any other segment of the population, in a parks system which should serve recreational needs of the population as a whole. To some extent the sociability function, with facilities provided in the form of canteens and community centers, or as in Agincourt Park, by opening adjacent school buildings to evening teen-age programs, constitutes an existing functional choice for teen-agers. Development of individual and casual sports: swimming in deep pools, bicycling along special paths, tennis, horse-back riding . . . the possibilities for expansion of park opportunities for the teen-age group seem almost

limitless when contrasted with the existing emphasis upon organized competitive sports. Were these possibilities fully developed, they would attract others besides just teen-agers, and in this way would contribute to the overriding goal of bringing all segments of the population together in parks.

Non-park Recreational Functions

The lesson of the study is, unfortunately, not so much that parks are "dysfunctional"; this could be cured by corrective action. Rather, parks would seem to be largely irrelevant to the leisure activities and preferences of most of the people most of the time. Leisure patterns were identified in the household questionnaire survey according to a hierarchy of time segments, within which households were asked whether or not they engaged in various outdoor recreational activities, some closely related indoor activities (such as attendance at sports events), and the major indoor leisure activity: television viewing.

In the questionnaire responses, about 40 per cent of the households indicated they made at least some use of nearby parks for younger children, and about 25 percent registered at least some use of parks by teen-agers. Thirty-two per cent of the households had teen-agers living at home and 33 per cent had one or more elementary school age children.

In other words, virtually every household with young children made at least some use of local parks, and most of those with teen-agers made some use of them. Given that many households had both teen-agers and younger children at home, these figures nevertheless indicate that perhaps half of all the sample households made at least occasional use of local urban parks. Any lack of participation in parks is therefore not ascribable to lack of awareness of them, although it is important to consider the large numbers of households, perhaps over half of those surveyed, which made no use at all of local parks.

Compared with the large number of potential users, very few were in any of the four selected parks at any one time. The peak use of any of the parks was the hot Wednesday afternoon in McNabb Park, when approximately 250 visitors were present at one time. The zone of influence of McNabb Park included about 3,000 households. Assuming an average household population of 3 to 4 individuals, the per capita attendance in McNabb on that peak day was roughly between 2 and 4 per cent of the potential users.

The use of McNabb Park was typical of the use of all four areas: primarily young children, without adult supervision or accompaniment, using playground equipment and wading in the pool, comprised mostly of a hard core of

children who came early, stayed for long periods of time, and often returned later in the day after taking time for a meal in early to mid-afternoon.

Most of the kinds of activity investigated in the household survey involved adults to some extent, and few of these activities made use of local parks. To put it bluntly, urban parks cannot hope to serve any larger a segment of the "recreation market" (or "demand" or "need" for outdoor recreation), unless adults become involved in using the parks.

To involve adults requires that the entire concept of urban recreation be reevaluated so that parks are located, designed and managed in such a way that they become attractive to potential adult users. The study revealed numerous patterns of household leisure activities which constitute the "products" adults "demand" in their leisure time, many of which could be provided for in local urban parks.

The first question which might be raised in relation to general leisure activities is the relationship between urban parks and vacation behavior. The data from the present study indicated no relationship between park use and any of the several possible kinds nor destinations of vacations. The data on ideal vacations indicated that for the respondent population as a whole, there were two major unfulfilled

ambitions: touring or sightseeing was the more important, but the other, perhaps surprisingly, was relaxing, doing nothing, staying home. No doubt a suitable development of local parks would encourage more interest in the alternative of staying at home. A further opportunity in the Ottawa-Hull area is for local parks to serve the needs and enhance the experiences of out-of-town visitors attracted to the city as a vacation trip destination.

The study did not provide any indication from respondents directly, of the precise kinds of activities they would desire for a relaxing vacation at home. An indirect approach to this idea would be to consider the activities commonly engaged in on vacations away from home in order to duplicate them locally. If a man's home is his castle during the working year, could it not also become his cottage during his vacation? When relatives visit from other cities, are they taken to local parks for visiting and picnics? And what is there to prevent the development of campsites within municipal parks for use by local families on hot summer evenings as well as by visitors who prefer this form of accommodation? Such an emphasis in local, not just regional parks of Ottawa-Hull would challenge the assumption that travel is a necessary ingredient of the annual vacation. It would be of further direct social benefit

in providing a vacation-like atmosphere for the large proportion of city residents who will continue to be unable to afford the time or the money necessary to enjoy a conventional vacation of a week or more away from work.

A special case of vacations is the summer camp vacation generally enjoyed only by the children of a household. The author is aware from informal sources¹ that the overall market for children's overnight summer camps has declined with the increase in family camping of recent years. It also bears noting that among the comments on ideal vacations from the questionnaire survey, there were several mentioning a desire to spend more time with one's family, whereas only one respondent expressed a desire to be away from his family more. These apparent changes in behavior and attitudes toward summer camping for children corroborate the author's view that recreation planning for the future will involve bringing people of all ages together rather than maintaining conventional separations.

The factor analysis of Table 32 showed that summer camps and urban parks are both complementary and competing facilities: complementary in that "outdoor enthusiasts" are attracted to both; competing in that the choice to use a

¹Including conversations with Edward W. Robinson, President, Mid-Atlantic Region, American Camping Association.

summer camp away from home requires that one not use local urban parks during the same period, and vice-versa. The two kinds of facilities also share the characteristic that they serve children in isolation from families.

Both far-away places and local parks might expect their numbers of clients to increase to the extent that they can provide opportunities for parents to participate with their children, as in family camping. In such a new direction of activities, local parks have an advantage over resident camps because of the high cost of maintaining whole family groups away from home for extended periods of time.

There were several kinds of weekend activities that appeared to be somewhat related to frequencies of local park use, but in the final analysis only weekend camping proved statistically significant. The behavioral significance of family camping is that, even though the statistics indicate that family campers also tend to be park users, family camping is a qualitatively different activity which draws people together rather than keeping them in separate groups.

Of much greater importance in the long run was the finding that fourteen other types of weekend recreational behavior besides family camping were not related to urban parks use. In other words, the city park system was substantially irrelevant to: the golfer, the cyclist, the deep water swimmer, the skier, the canoeist, the horseback rider, the gardener, the student of nature, the fisherman, the cottager, the picnicker,

the pleasure driver, and the hiker.

Several of the above activities require linear, rather than compact rectangular-shaped recreation areas. They constitute various forms of "trail use" whether on bicycle, on skis, in a canoe, on horseback, in a car or on foot. The acreage required for a "linear park" would not be substantially more than that needed for conventional parks of rectangular shape; it would be distributed differently and would accommodate qualitatively different activities currently limited to weekend time periods.

In Ottawa-Hull, the National Capital Commission has taken the lead in developing linear parks for various modes of transportation, from ice skates to bicycles. The obvious success of these endeavors shows that such recreational functions, once restricted to peripheral areas, can profitably be developed within cities, and should constitute a major item on the planning agenda of municipal recreation agencies. Parcels of proper linear shape are readily available for acquisition in most North American cities (See Brooks, 1969).

One would expect that local urban parks would accommodate much, if not most of the range of outdoor recreational activities engaged in during the afternoon and evening of ordinary work and school days. This must not be an accurate expectation, according to the survey results. Only such

ubiquities as "snow play" and "hide-and-go-seek" turned out to have a significant relationship to frequencies of park use, and these were so related not necessarily because they took place in parks at all, but probably because they were common among the elementary and high school age groups who happened to make the greatest use of the parks also.

There is always some question about responses to dog walking as an activity, since it is forbidden in city parks. Perhaps more use was made of local parks for dog walking than respondents were willing to admit. In any case, it is undesirable from the children's standpoint to use their parks for dog walking. Special areas need to be set aside for the canine population. It is useless to ignore the problem.

The first linkage group of daily outdoor recreational activities contained backyard barbecues as well as dog walking. This activity was definitely absent in all four of the parks of the study. Simple facilities could easily be provided which would attract local residents and their guests from the confines of small back yards to spacious park land and convenient play equipment for evening picnics.

Numerous daily outdoor recreational activities were included in a linkage group with the variables "snow play" and "hide-and-go-seek", although only the latter were signi-

ificantly related to park use frequencies. The other activities would be suitable for local parks, but did not account for park visits on a regular basis among the households surveyed: accompanying young children to the park, using play equipment or wading pools in one's back yard, sunbathing on summer afternoons, taking walks without dogs, and sitting quietly on one's veranda. These are activities that involve mothers and other responsible adults together with children.

Central Park, developed by the National Capital Commission in the Glebe area of Ottawa, is on a scale comparable to local city parks, but is linear in shape and contains leisure use attractions: pathways, trees, benches, and a small lagoon. The park attracts sunbathers, many of them mothers with pre-school age children, on summer afternoons, and couples and families taking walks in the evening. It is one example of a local park with facilities to attract adult users, and which therefore attracted a wide variety of people and activities in direct contrast to the city parks selected for systematic study.

The linkage analysis isolated one other activity as independent from the rest of the daily outdoor recreational activities discussed above: walking to and from work. It is probably fair to say that, at the time of the study, any use of urban parks for this purpose was purely accidental.

Even bicyclists were complaining at the time that the transportation network did not reflect their particular needs. Yet at the time there were already a number of respondents who regularly walked to and from work. (The number using bicycles for this purpose was so small that the variable was not considered in the analysis.) Again, a need existed for linear parks, but not just those oriented along waterways or other accidental opportunities provided by nature and history: there was and remains a need for linear parks connecting residential with employment areas. With a little planning, the journey to work could become a pollution-free recreational pleasure for anyone, without regard to their economic means. Since walking to and from work is a daily activity, it is potentially the greatest single form of "trail use" as measured by frequencies of participation.

Urban Parks Use in Relation to Television Viewing Habits

The survey results contained numerous surprises, not the least of which was the dual nature of the relationship between television viewing and parks use. Significant relationships were noted between the two forms of recreational activity, but the relationships were either negative or positive, depending on the time of day when the television was being watched. It would seem that in those households with the television on in the early afternoon, the children

were less likely to visit local parks regularly, whereas in households with regular park visitors, the television was very likely to be on during the late afternoon. Thus, the television was both a source of competition among infrequent park visitors, and a source of complementary activity among regular park visitors.

Despite these relationships, television proved largely irrelevant to park use, especially during the "peak" viewing hours in the evening. Thus, once again there was evidence of a lack of adult involvement in the use of local parks. The observed patterns of television viewing in the evening hours served to distinguish among more or less affluent households, those with and without children, and those with more or less recreational equipment in their possession. These were all fascinating differences among households that one would hope to have some effect on patterns of parks use; but none was found.

Since television viewing occupies the largest proportion of leisure time of any single activity, it can be taken to indicate the overall "rhythm" or timing of available leisure for society as a whole¹. Mothers with babies must

¹The term "rythme de vie" was suggested to the author by Jean de la Plante, Information Officer, Montreal Service des Parcs, in 1970, as one of two factors he felt were significant in explaining the "affluence" of, or attendance at parks at any given time. The other factor was "température", which can be translated either as "the temperature" or as "the weather".

remain at home in the early afternoon, for "nap" time. Employed adults are preoccupied during working hours, which are generally between early morning and late afternoon except for weekends and vacations. The overall pattern of television viewing appeared from the survey results to consist of a small peak early in the day, followed by a decline to a minimum shortly after noon, then a rise to the major peak between 8 and 10 p.m. It is indicative of the isolation of urban parks use from the "mainstream" of the flow of leisure time in society, that the timing of park visits was almost exactly the opposite of this television viewing pattern. If the babies with their mothers or nursemaids came regularly in the morning, and if more adults came to the parks each evening, the timing of park use would more nearly resemble the full utilisation patterns such as those described by André Gide or Joseph Guss for the Jardin du Luxembourg or Rittenhouse Square. There would be a gradual crescendo building from the opening of the park in the morning until well into the evening, when finally the use would begin to taper off.

Given such large potential for urban parks use, so little fulfilled in virtually all urban parks of North America, the central issue is not to explain existing use patterns, but rather to reevaluate current approaches, and to develop new criteria for urban parks system planning

that can more adequately respond to the range of existing and future leisure needs of urban societies.

Developmental Criteria

In the foregoing discussion, numerous suggestions have been made which would have the effect of bringing about significant qualitative changes in patterns, functions and frequencies of urban parks use in four selected neighborhood areas of Ottawa, and, to greater or lesser degree, in Ottawa-Hull and other urban areas of North America and the world. In the following discussion, selected park system planning criteria will be considered with reference to this broad scientific and human concern for the implications of functional change in urban parks systems. These criteria include: space standards, park use ecology, park demand, and the sizes and shapes of park areas.

Space Standards

It follows from all previous conclusions that the use of per capita space standards as a guide to urban park planning is much too simplistic an approach, even if it were true, as for example in Newark, New Jersey, that use of this approach could indicate glaring examples of deficiencies in an entire city, or in one or more neighborhoods of a city. After investigating factors of park equipment provision, interviewing park visitors and questioning households, the

author emphatically agrees with Elinor Guggenheimer's assertion that "too many variables are involved". It is equally conceivable that a city or neighborhood could enjoy an excellent quality of park service on a single tract of modest proportions, or that vast areas might be set aside as parks but never used at all for recreational activities.

The Ottawa-Hull metropolitan area contains on the order of 1000 acres of municipal parks, not counting the Central Experimental Farm or the "regional" parks of the National Capital Commission (all within city limits). If one includes the Gatineau National Park, there is more than ample acreage in Ottawa-Hull and its region to exceed standards for local and regional park systems. The problem is not that acreage is scarce, but that the functions of municipal parks are too narrowly restricted in this region. The question is, acreage for what?

Park Use Ecology

The present study has contributed an in-depth analysis of factors of park use in four selected neighborhoods, for only one type of urban park. Cultural differences among the neighborhoods were indicated by the results. The models of park use derived in this way should be extended to other areas and other park types so that their general validity can be assessed. Meanwhile, this first step in research has led to the identification of a wider field of inquiry with-

in which to frame further studies: the use of urban parks by adults. The existing ecology of many urban parks is sterile. More attention should be paid in future to examples of park use involving wider participation from society as a whole. The number of such examples may be relatively few, but they are of vital significance to the future of urban parks systems. In building the parks of the future, virtually all existing interests of complex urban societies will be affected: witness the involvement of planning, real estate, sanitation, health and highway agencies in New York's vest pocket park program. The basic requirement of park system modification is the growth of innovative attitudes both among park administrators and among the public at large, who can visualize and demand improved park services, despite piecemeal objections from multifarious reluctant interests. The range of possible alternatives for park system development can be further clarified and extended by more systematic research into park use ecology.

In his description of Rittenhouse Square, Joseph Guess mentioned the following recreational activities: walking for pleasure, walking to and from work, strolling and lingering on the way to shopping places, accompanying small children to the park, eating lunch at adjacent restaurants, after school children's play activities, dating, watching others in

the park, and "idling". All of these activities could exist in each of the parks of this study, but in fact all were either completely absent, or present only to a very limited degree.

Add to the above, the activities of a truly "cultured" park, the Jardin du Luxembourg in 1925: the paths are washed each day, the grass watered, the flowers tended and the bushes trimmed; nursemaids mind the children; workers come to the park before returning home in the evening; lunch is consumed in the park as well as in adjacent restaurants; youth arrive for dates, but also seek solitude; the park is a destination, not just a short-cut, for shoppers; for others, strolling through the park is an end in itself. These, too, are activities which potentially exist in every urban neighborhood, but which can only be realized if local parks provide opportunity.

Park Demand

The results of the study have indicated a definite spatial gradient of park use both in terms of visit rates per unit area, and in terms of declining visit frequencies, in some but not all of the situations examined. Hawthorne Park seemed to be in a monopoly position in its neighborhood, such that distance away from the park did not appear to reduce visit rates, at least up to the neighborhood boundaries. In all four study areas, the household surveys did not

indicate any decline in visit frequencies among younger children, but there was a slight decline among the teen-age park user population. The data collected in the present study were not sufficient to permit an estimate of the actual "demand" for the parks in the full economic sense of the term. The results would seem to support a conclusion, however, that the availability of substitute areas might be the major factor accounting for declines in visit rates with distance, among a sub-population of park users with an otherwise inelastic demand for children's park facilities.

This conclusion follows from the observation that visit frequencies were fairly constant among households with young children at all distances from each selected park, whereas park user data showed declining visit rates with distance in three of the four park areas. This difference in results is reconciled by the deduction that households at greater distances were using other than the four selected parks.

It may be recalled that Norbert Dee also found, in his study of the use of playgrounds in Baltimore, that the distance of the nearest alternative playground had a significant effect on attendance at the playground being considered. Accepting this same conclusion, as interpreted

for the results of the present study, it would appear that most, if not all, of the potential children's demand for parks has been met in the four selected areas.

From the travel distance information of the user surveys, a distance of 1/2 mile would seem a realistic limit to the zone of influence of a park to be used by elementary school aged children. Rational planning of such facilities would therefore involve allocating the resource (play equipment and wading pools, in this case) such that every household with young children would be within 1/2 mile of the desired facilities. The remainder of the problem is simply to provide enough quantity of the facilities to accomodate the number of expected users.

By this criterion, the zone of influence of each set of children's facilities would be somewhat less than a square mile. If it were followed, there would be considerable opportunity for rationalizing existing facilities in the Ottawa-Hull area. For example, the zone of influence of Agincourt Park as identified in the park user survey included an area of less than a square mile, but contained 5 smaller children's parks. The zone of influence of Anglesea Square included only two other parks with playground equipment, and of McNabb Park, no alternative facilities, even though these parks served comparable areas with considerably denser population distributions.

As a general rule, it would seem there might be much needless duplication of children's park facilities, but this conclusion does not imply a suggestion to withdraw existing park lands from the system. The study has indicated many elements of potential demand for urban parks not currently served by the system. Not all such needs must necessarily be met together in each park area. Just in terms of travel distance as one criterion, without greater volumes of the variety of possible uses to study, the distance relationships of "child care", dog walking, teen social functions, not to mention the wide range of possible adult activities remain in doubt. There are, furthermore, criteria to be considered in allocating park resources which extend beyond economic "rationality" in the sense of optimizing travel distances to parks for various purposes. These include such considerations as the viability of various mixtures of activities in the overall ecology of parks use, the role of parks as an agent for bringing together various segments of society, possible inequalities in levels of park services provided in different neighborhood or community areas, cultural differences in park demand, and so on.

The basic assumption of a "distance-demand" approach to park planning is the disagreeability, or costliness, of travel to reach a park. If one accepts this assumption, then there can be no ambiguity in responding to Marion

Clawson's research question: "what portion of this demand [for parks, playgrounds, and similar areas] should be met inside the urban area, and what portion should be met outside?" If travel is unpleasant, the greatest benefits would result from providing as much as possible of all recreational opportunities within the urban area where they are readily accessible. Indeed, since pollution from automobiles is an added social cost of travel, the ideal situation for maximizing recreational benefits to society would be to provide the full range of opportunities within walking distance of each urban household. The research question should be phrased differently to be consistent with the assumption that distance means costs: not, what portion of demand should be met inside the urban area, but rather, what portion of demand can be met there? It would appear that, even with existing limited resources, more of the demand could be met than is presently being met.

Of course, not all travel is unpleasant or costly, and so the question of optimum location of facilities becomes ambiguous. Even were the facilities identical in other respects, some would prefer to enjoy them in the Alps rather than in the Gatineau. A motor tour across Canada, far from unpleasant, constitutes an ideal vacation in the opinion of many. Such perceptions of travel can offset the behavioral significance of distance "barriers" as well

the economic significance of travel "savings", and lead to consideration of what Clawson and Knetsch have termed the entire "recreation experience". The geographer's special concern for location leads to examination of the areas through which travel takes place, as well as the source areas of potential park users and the destination areas of park use. In other words, a full understanding of recreational experiences requires a broader definition of recreational environment, to include lines of travel, areas of activity, and points of origin and destination.

The Sizes and Shapes of Recreation Areas

On the one hand, the urban park system of Ottawa-Hull contains areas which could be more fully utilized if their recreational functions were transformed. On the other hand, the existing, generally rectangular or "compact" parcels of land in the system are not well-suited to several of the kinds of recreation activity for which demands are potentially significant. The recreational possibilities of the system would be expanded considerably if there were more "linear" areas in which travel of some form or other would be the primary recreational activity: walking, dog walking, hiking, bicycling, horseback riding, canoeing, ice skating and jogging are among the numerous possibilities. There is need to identify available areas which are or can be protected from frequent interruptions of street crossings, and which originate and/or terminate at locations

accessible to potential users; for example, those who already prefer to walk to and from their place of work, and those who would prefer to do so if conditions were improved.

Linear parks would supplement the existing system of rectangular or compact areas which serve more stationary or spatially confined activities. A relationship was found among Ottawa city parks between park scale and the kinds of facilities provided in them, though no clear hierarchy of parks could be defined. Although rationalization of park sizes and facilities is a future possibility, the existing sizes and functions of parks probably reflect historical accidents and complex administrative decisions largely independent of the criterion of recreational needs. Perhaps there would be more opportunity to plan for specific park sizes if the kinds of functions to be provided by a given park were known in advance. However, even if this were possible, it would seem unlikely, since it is difficult to imagine that the Department of Recreation and Parks could exercise control over the sizes of land parcels which might be available for acquisition in particular areas.

Presumably there are certain minimum areas necessary to the provision of certain types of park facilities. Perhaps these minima are smaller than one might suppose: even on the busiest days, the parks of the present study always had large unused areas at any given time. Beyond such mini-

mum levels, if they exist at all, other criteria must assume greater importance than park size: especially, the shape of the park, the kinds of recreational functions it provides, and its location relative to potential users.

The Need for Systemwide Sampling

At the inception of this research, the original model was an explanatory one including four hypothetical factors of existing urban parks use: the park type, base population characteristics, distance or accessibility, and the weather. The weather was excluded from consideration because of a lack of suitable data, although its importance is unquestionable, particularly as a factor of variations of levels of park use over time. The accessibility factor was considered with particular reference to its importance in estimating "distance-demand" for the parks of this study, with the tentative results which were outlined above. The study further considered the complex questions of park characteristics and base population characteristics. The need to extend the present study to a systemwide analysis is particularly urgent with regard to these latter two factors.

Park Types

In Chapter II, an attempt was made to identify specific park types based on recreational functions accommodated in each of the 67 parks for which equipment data were available.

Although three functions were identified, it seemed after repeated attempts at classification by a variety of procedures, that rather than constituting distinctive types, the parks merged into one another in a continuous fashion. Therefore, it would not be realistic to speak of the effect of a given park "type" on the nature or amount of park use. Rather, the presence or absence of equipment serving a particular function might be used as a basis for anticipating the presence or absence of that kind of use of the park. The shape and size of a park can also be considered, along with kinds of equipment provided, in assessing the functional nature of the park.

Of equal significance in the analysis of park functions are the activities actually engaged in by park users, which are combined into distinctive clusters that constitute the real "functions" of the park in terms of behavior. The results of the park user survey, reported in Chapter V, verified the existence of such behavioral "functions" or activity clusters, some of which corresponded to the kinds of equipment provided in the parks; but there were also activity clusters present for which no equipment was provided.

The survey design of the present study was such that the park type was assumed constant from one area to the next, in order to control for social differences in park

use patterns. Thus, more detailed investigation of effects of park characteristics on use patterns was not possible. Such investigation could have been attempted on the basis of supervisors' estimates of park attendance, except that these estimates were not considered accurate enough to be relied upon. Future studies can profitably focus on deriving accurate use estimates for entire park systems, and simultaneously on analyzing in depth the use of a selected set of parks chosen for differences in facilities and functions.

Base Population Characteristics

The effects of base population characteristics on park use have been summarized in detail in Chapters VII and VIII. Two separate sets of factors were identified, one for children's park use, the other for teen-agers' use of parks. The number of children in the appropriate age category in each household was the most important explanatory variable in each case. In agreement with the findings for Baltimore playgrounds, the results of this study indicated that income did not significantly influence park visit frequencies. Other social variables such as language spoken at home, were likewise of little effect. The only conventional social variable of importance was attendance at public rather than separate schools, and this effect was limited to the relatively less numerous teenage visitor population. On the other hand, the park user survey did indicate that those

who responded in French visited the parks less frequently than those who answered the questions in English. Finally, although the parks were presumably similar in recreational functions, teen-age park visitors were shown in the user survey to have significantly different frequencies of visits from one park to another.

More important in explaining differences in visit frequencies were some very specific household characteristics associated with the ages of household members and their preferred leisure activities. Did the children possess a baseball and bat? Did they watch T.V. in the early afternoon, or go to the park and return home later to watch T.V. in the late afternoon? Did they go camping with their families on weekends? Did they camp in a tent? Did they participate in neighborhood games such as hide-and-go-seek, build snowmen and igloos in winter? The existence of a sub-population of regular or "hard core" park users was clearly shown in the four parks of this study. The apparent lack of relationship between this sub-population and most conventional socio-economic variables is of great significance, assuming that the same conclusion would hold for all the parks in the system. Since there were definite differences in park use behavior among the four culturally different neighborhood areas selected for this study, the concept of "culture" requires a broader interpretation if these differences are to be explained. The author suspects that the land use pattern is a major factor for children, who apparently are indiffer-

ent to the status positions of their elders.

General Considerations

In general, the model presented at the beginning of this study proved useful in organizing the inquiry into factors of urban parks use. It was, in this sense, "verified", although within each general factor some surprising results were obtained for specific variables. The immediate research need is to press the analysis further to entire urban parks systems. The differences in park use isolated in four small areas need to be explored more widely to determine their general significance.

With more data available in accurate and usable form, for entire parks systems, it is also possible to investigate effects of the weather on park use patterns, with respect both to park functions and to levels of attendance. This factor is directly involved in the more general research question of the timing of park use, and the practical question of how to bring about a fuller utilization of the park resource through time.

The present study has demonstrated that there are both a research gap in understanding the use and non-use of urban parks, and a social gap in the lack of full utilization of this significant urban land resource. The practical

difficulties of park visitor and potential visitor sampling have been overcome in the course of this exercise. Further, larger-scale investigations can profit from this experience, to yield, in return for modest efforts, large benefits to the quality of urban life.

EPILOGUE

The general question of urban park use is inseparable from the many realms of human endeavor and aspirations. In the world of the 20th Century, the vast majority of people in urbanized societies spend the greatest portion of their lives in and around the city. This urban milieu provides mankind with unprecedented potential to master the environment, enabling fantastic, some would say excessive levels of living in the material realm.

Material comfort in cities is maintained at the price of environmental deterioration in the countryside and steadily increasing levels of stress and pollution in the cities themselves. The process cannot continue indefinitely, without finally defeating the material goals of urban civilization.

A contemporary trend of human values is toward a more balanced equilibrium between human material wants and the preservation of, or return to, the enduring values of the natural environment. As the values become translated into specific land use practices and policies, the city will be transformed to provide residents with increasing opportunities for rural-style living.

Given the land use and administrative structures of North American cities, such a change in land use policies is likely to be implemented through the agencies of municipal and regional recreation and park authorities. The traditional city park, providing social participation and cooperation, and statutory freedom from the urban land market with all that this implies, can be developed to meet this urgent social imperative of our time.

PART D

APPENDICES AND BIBLIOGRAPHY

APPENDIX I

NOTES ON STATISTICAL METHODS

Most of the variables to be treated in the study were nominal in character, requiring special treatment and cautious interpretation of results. Some methods specifically designed for nominal variables were used: linkage analysis of phi coefficients and chi-square tests. Singular decomposition and analysis of variance are among the few methods available for treating a mixture of nominal and interval variables. Factor analysis and linear regression were also used to analyze some of the data, even though the assumption of normally distributed continuous variables underlying the use of the latter methods was not always adhered to. In the following sections of this appendix, the use of statistical methods is reviewed and, where necessary, explained for each step of the investigation.

Factor Analysis

The first use of statistical methods was made in Chapter IV, in considering the functions of the urban park system of municipal Ottawa. In this portion of the study, the author followed procedures closely similar to those outlined in Ecologie factorielle et attributs géographiques

(Racine and Cavalier, 1972). Principal components analysis was used to probe into the unknown dimensions of variation in the provision of park facilities. The principal components analysis was not viewed as an end in itself, but as a means of achieving a more refined typology of parks than would have been possible without the analysis. Since a few of the variables used in the principal components analysis were dichotomous, the results of the analysis were checked by a "singular decomposition" of the park equipment variables. Singular decomposition is a factoring method developed and programmed by John S. Lewis. It avoids constructing a correlation matrix as the basis for factoring, and therefore does not require that the original data be in the form of normally distributed continuous variables. The factors resulting from principal components analysis appeared again in the results of singular decomposition. The factor analyses were successful in identifying dimensions of equipment provision which could be interpreted as "functional" dimensions, that is, equipment provided for particular kinds of activities by specific sets of park users. The fact that the parks could not readily be classified on the basis of their functions was not the fault of the classification methods attempted, but rather the result of the nature of the data: parks were simply not provided with equipment in a systematic way. If they had been, the data would have confirmed the existence of distinctive types corresponding to the administrative categories previously mentioned. Indeed, the implications of this portion of the study

are both to question the existence of distinctive "types" of urban parks, and by extension the functional meaning of administrative categories of all recreational parks.

Methods of Classification

Once the factors of park equipment were identified, several methods were used to group the parks into types, or classes, including linkage analysis, discriminant analysis, and congrouping. (The presence-or-absence criterion was also used, but need not be elaborated upon here.)

Linkage Analysis

Linkage analysis was developed by L.L. McQuitty as a convenient method for grouping variables. The procedure used here was called "elementary" linkage analysis by its founder (McQuitty, 1957). McQuitty considered linkage analysis to be similar to factor analysis, except that it was based on a different theory of "personality" (or, more generally, of group structure). A major difference is that no external "cause", or factor is ascribed to the observed group of related variables. Each group constitutes a "type", and for each such type there is a "prototype". The following definitions are provided by McQuitty:

. . . A typical structure is defined as one in which every member of a type is more like some member of that type (with respect to the data analyzed) than he is like any member of any other type. (McQuitty, 1957, 209.)

The prototype:

Operationally, it may be defined as the centroid of the characteristics possessed by the members, or it may be defined as the characteristics possessed in common by all members of the type. (McQuitty, 1957,209.)

In practice, elementary linkage analysis becomes rooted in the existence of "reciprocal pairs" of variables, those with a correlation coefficient between the pair higher than any of the coefficients between either member of the pair and any other variable of the matrix. To use McQuitty's terms, the paired variables are "more like" each other than they are "like" any other variables. As individual variables continue to be linked with the variables which they most closely resemble, the inevitable result is that the number of "linkage groups" is the same as the number of original reciprocal pairs of variables.

To apply linkage analysis to park classification, it was first necessary to transpose the data matrix. Otherwise, linkage groups of variables would be obtained. By transposing the data matrix, one can obtain a matrix of correlation coefficients of parks with parks, rather than variables with variables. This new correlation matrix was a 67 by 67 matrix. It contained, unfortunately, no less than 14 reciprocal pairs of parks. Thus, 14 groups were identified by the linkage analysis.

Discriminant Analysis

Discriminant analysis is a method of "compacting" groups previously identified by some other procedure. It is especially useful as a second stage after linkage analysis. Linkage analysis groups individuals with their nearest neighboring individual on a given set of attributes (or vice-versa). There is no guarantee that the individual will be placed with a group that the individual resembles more closely than other groups. In discriminant analysis, a "centroid" position is calculated for each existing group; then the distance of every individual from the centroid position is calculated. Individuals are replaced in the group they most closely resemble, necessitating a further calculation of the centroid positions, and so on, until the groups become "stable", i.e., every individual resembles the group it is in more closely than any other group. Put another way, within-group differences have been minimized, while between-group differences have been maximized. The number of groups to be formed and the membership of each group has been specified in advance, and is therefore arbitrary within the logic of the replacement procedure. For grouping parks in Chapter IV, the original groups were identified first by linkage analysis, and later by a factor analysis of the transposed park data matrix. In both cases,

the groups resulting from discriminant analysis were so far removed from the groups originally submitted to the analysis, that, in the author's opinion, the original justification for the group structure was no longer valid. In other words, the groups which had been formed were mathematically sound clusters, but logically they were arbitrary.

Congrouping

The "congroup" program was written by Peter M. Neely. By this method, each park is compared with all other parks at each step in a process of agglomeration into increasingly large groups. The method allows for two groups to be combined into one, and this may occur before some individuals have joined any group at all. Except for this difference, the grouping criterion is the same "nearest neighbor" principle used in linkage analysis. The successive combination of individuals with groups and of groups with other groups continues until all individuals are finally joined into a single, all-embracing whole.

There are several possible stages of a congrouping process at which there is some "objective" reason to consider that the groups formed at that stage are optimal. One such stage is the point at which the maximum number of groups has been formed. At this point, the classification has the greatest amount of "information", or degree of discrimination among the different groups. Another kind of optimum is achieved when the last individual enters a group:

at this point, the amount of information contained is still likely to be great, and the classification is complete. Another stage of interest is that immediately before, or immediately after the number of groups suddenly becomes much smaller than it had been. For the purpose of Chapter IV, the first stage considered was that at which all parks had entered a group. Brewer Park proved so unlike any others in the system, that it did not enter a group until step 62 of the process. Since the groups formed at step 62 were difficult to interpret according to park equipment functions, it was necessary to consider the subsequent steps as well.

Phi Coefficient

In order to make use of procedures such as principal components analysis, or even the mathematically much simpler method of linkage analysis, some kind of correlation matrix was required. The data of the study were primarily nominal variables, but there was a method available for producing a kind of correlation matrix among dichotomous data vectors: the phi coefficient.

The phi coefficient is closely related to two other statistics well-known to geographers, chi-square and the product-moment correlation coefficient. The mathematical characteristics and potential applications of the "phi" are described in detail by J. P. Guilford and Benjamin Fruchter (1973, 306-309). Before elaborating upon the relationships

of "phi" to other statistics, it may be useful to specify the definition of "phi" both in standard mathematical notation and in Fortran computer language.

Given variables X and Y, both binary data vectors, there are four possible outcomes of an observation: 0,0; 0,1; 1,0; and 1,1. These may be summarized in a two by two table as depicted below:

Variable Y	Variable X		
	0	1	
0	D	B	B+D
1	E	A	A+E
	D+E	A+B	N

In the above table, A, B, D and E constitute frequencies of observations in each cell of the matrix. The row and column totals of the matrix are, respectively, B+D, A+E and D+E, A+B. Using this notation, phi is defined mathematically thus:

$$\phi = \frac{A \cdot D - B \cdot E}{\sqrt{(A+B)(D+E)(A+E)(B+D)}}$$

The product AD is the number of observations of 0,0 times the number of 1,1's. In other words, it denotes positive relationships between the two vectors. Similarly, the product BE denotes negative relationships. In general, the

numerator is analogous to the "covariance" term of a product-moment correlation coefficient. The denominator is equivalent to the product of the standard deviations of the two vectors. Hence, phi is the binary equivalent of a product-moment correlation coefficient. In practice, if the phi formula is applied to data, and if the formula for Pearson's "r" is applied to the same data, the result is an identical "correlation" coefficient, according to Guilford and Fruchter.

The computational procedures are different for the two statistics however. The following is the procedure for calculating phi expressed in FORTRAN:¹

```

DO 7 J=1,M
DO 7 I=J,M
ID = 0
IC = 0
IB = 0
IA = 0
DO 6 I=1,N
IF(C(I,J).EQ.0..AND.C(I,L).EQ.0.) ID = ID + 1
IF(C(I,J).EQ.0..AND.C(I,L).EQ.1.) IC = IC + 1
IF(C(I,J).EQ.1..AND.C(I,L).EQ.0.) IB = IB + 1
IF(C(I,J).EQ.1..AND.C(I,L).EQ.1.) IA = IA + 1
6 CONTINUE
A = FLOAT(IA)
B = FLOAT(IB)
E = FLOAT(IC)
D = FLOAT(ID)
ANUM = (A-D) - (B-E)
DENOM = SQRT(((A+B)*(E+D)*(A+E)*(B+D)))
P = ANUM/DENOM
IF(P.EQ.0) P = .0001
PHI(J,L) = P
PHI(L,J) = PHI(J,L)
PHI(J,J) = 1.00000
7 CONTINUE

```

¹In this FORTRAN program, "C(I,J)" are the input data. The program as listed here was obtained from J. B. Racine,

It remains to consider the relationships between the "phi" coefficient and the chi-square statistic. The numerator of "phi" is clearly rooted in the comparison of observed with expected values (as is the chi-square). The expected values in each matrix cell are obtained by multiplying row and column totals: $(A+B)(A+E) + (B+D)(D+E)/N^2$, for the cases of agreement 0,0 and 1,1; and $(B+D)(A+E) + (D+E)(A+B)/N^2$, for the cases of disagreement.

Taking only the cases of agreement, the observed minus expected values would be as follows:

$$(A+D)/N - [(A+B)(A+E)/N^2 + (B+D)(D+E)/N^2]$$

Collecting terms,

$$\begin{aligned} & \frac{N(A+D)}{N^2} - \frac{(A+B)(A+E) + (B+D)(D+E)}{N^2} \\ &= \frac{2(AD - BE)}{N^2} \end{aligned}$$

Thus, the numerator of the phi coefficient is identical to the comparison of observed minus expected values of chi-square. The major difference between the two statistics is that this comparison is divided, in chi-square, by the expected value, whereas the denominator of "phi" is the product of all the row and column totals.

In practice, it is conventional to show the "phi" or

and probably originated in the Department of Psychology, McGill University, Montreal. The mathematical result of the operations of this program is identical to that of the definition of "phi" given by Guilford and Fruchter.

its relative the "contingency coefficient" at the end of a computer printout of a chi-square table. The phi coefficient is based partially (in the numerator) on the principle of chi-square, but also, like Pearson's "r", it indicates the precise degree of relationship between two variables.

"Phi" is significant only if the underlying relationship is significant. Chi-square is the test of significance of phi, according to Guilford and Fruchter. In other words, chi-square is to "phi" as the T-test is to Pearson's "r".

To complete this discussion, it is interesting to note the simple hand calculations which can be used to arrive at phi. The relationships between phi and chi-square are remarkably simple:

$$\chi^2 = N \phi$$

and

$$\phi = \frac{\chi^2}{N} .$$

Multiple Regression Using Dummy Variables

Once the dependent variable was clearly identified as the frequency of park visits, indicating "hard core park usage", the method of multiple regression was convenient to use in exploring relationships between other variables and this one crucial dependent variable. As in principal com-

ponents analysis, multiple regression is based on coefficients of correlation between variables, and therefore the assumptions of continuous variables with normal distributions apply. However, it is common practice to include nominal or dichotomous variables in regression equations, provided that the results are interpreted with care.¹

If a dichotomous variable is included as an independent variable, the effect is to divide up the sample population into two groups: those with or without the attribute in question. The coefficient of the dichotomous variable is not meaningful in the usual sense, since it cannot affect the slope of the regression line. Rather, it becomes a "shift" variable, which indicates the degree to which the average individual possessing the attribute scores higher or lower than the non-possessor of the attribute on the given dependent variable. Conceptually, one can imagine two regression lines parallel to each other, with the "dummy variable" determining which regression line one is on.

The mathematical significance of such a "dummy", or dichotomous variable is determined by the "F-test", which is the basis of stepwise multiple regression. The F-test is also used in the analysis of variance. In fact, analysis of variance is mathematically identical to regression using dummy variables. For this reason, the fundamental equations

¹Use of nominal, or "dummy" variables in regression equations is discussed in Suits (1951) and Chew (1958). Economic applications are discussed in Goldberger (1966).

presented in Chapter VIII are based on stepwise multiple regression results, in which each variable, whether dichotomous or continuous, was tested for significance by the F test at each stage. Variables which were not significant at the 5 per cent confidence level or better by the F test were not included in these equations.

APPENDIX II

DATA GATHERING PROCEDURES

A pioneer attempt to apply Clawson's approach to the study of urban, as distinct from rural or regional parks, was carried out under the auspices of the Greater London Council, in England, in 1968. A large number of topics were dealt with by the Greater London Council, on the basis of closely related surveys, one of visitors to "open space" (urban park) areas, others of base populations of potential visitors from various London neighborhoods and schools. The detailed report of research findings was, however, premature in the sense that serious sampling difficulties were encountered in both sets of surveys. The major sampling difficulties were: (1) there was no systematic basis for selecting the parks in which surveys were conducted; (2) there was no reliable sampling procedure available for interviewing park visitors in those parks; (3) the returns from the neighborhood surveys were heavily weighted toward the upper end of the economic spectrum. Serious attention was given to each of these problems in the design of surveys for the present study. Only four parks were selected, each having essentially the same type

of equipment as the other three. A sampling procedure was developed which gave a valid sample of visitors in a "free-access" area, based on the geographic controls on park entrances and exits. Two of the four communities selected for the household survey were "urban core" areas with correspondingly dense populations. Therefore, a great many more households were sampled in the relatively lower socioeconomic areas, with the result that a balanced sample was obtained despite the lower rates of response in these areas.

Park User Survey

The park user survey was conducted in the summer, and through the fall and winter of 1970-71. Only a small part of what was observed during this period has been reported on in this dissertation. The remainder provided the author with a better intuitive grasp of the subject, but insufficient hard data was collected to extend the analysis beyond the particular seven successful interview days in the summer use season. For example, it proved impossible to replicate the sampling method devised for summer park use in the sub-zero temperatures of the winter use season: the author could not last more than a half-hour standing at the access points. Nevertheless, full days were spent observing the use of the four selected parks at each season of a full annual cycle.

The problem of sampling visitors to a free-access area

was recognized by a survey team from Michigan State University in 1960. At the time, they were conducting a survey of the use of the Cook County Forest Preserve, in Illinois, as part of the Outdoor Recreation Resources Review Commission study of Outdoor Recreation Needs in Urban Areas (1962). Lacking any better solution, the Michigan team conducted their survey on the road leading to the most popular forest preserve area, with no consideration of the hundreds of other possible visitor access locations. A similar procedure was later used by the Greater London Council for the pedestrians arriving in London parks. Closest to a representative sample probably was achieved by Norbert Dee in his study of Baltimore playground users. His approach was to try to interview everyone in the playground. This, of course, could not work in a larger park area with many visitors and/or many access locations.

Two major problems involved in gaining a reliable sample of large numbers of visitors to a free-access area are that (a) the total population of visitors is unknown; and (b) entrances and exits along the park perimeter are diffused in an unknown way. In the survey of Ottawa park visitors conducted in 1970 as part of this study, and presumably in other similar situations, it was possible to overcome these problems. The basis of the method described below was, above all, direct observation in the field of the arrivals

and departures of park visitors.

An ordinary city park generally occupies part or all of one or more city blocks. In such a case, although theoretically everyone arrives wherever they wish along the perimeter of the park, in practice nearly all of the visitors will arrive and enter the park at a street corner location. This is because there are relatively few dwellings located across the street from the park. Everyone else follows the grid street pattern to reach the park, and thus reaches the park at one of the street corners. Given free access, the visitor will then follow approximately a straight line course from the street corner, diagonally across the park, to the point in the park which has the equipment or other feature which attracts the visitor to the park (a wading pool, for example). When the visitor leaves, the same pattern is followed in reverse order. Whether the sample is taken of visitors as they arrive or as they leave, the geographic control point for interviews is usually at each street corner.

In actual sampling, some provision must still be made to include those few visitors who came across the street directly from homes facing the park (legally they were also required to cross at street corners, but in practice there were exceptions to this rule). Thus, the interviewer stationed at a given point would also have responsibility

for the section of park perimeter nearest to his station. Various other contingencies might arise in special situations. For example, a high rise building with many young children as residents across from a park could generate its own stream of park visitor traffic. Another contingency which did arise for one of the selected parks was lack of visitors arriving at one of the corners. The "hinterland" of a corner of Anglesea Square was in the process of urban renewal, so that many buildings had been torn down. The corner also did not provide convenient access to facilities within the park. After one entire day of interviewing, not one interview had been completed at that corner, so it was subsequently eliminated as an interview station.

In sampling the use of an area, it is imperative to know the total population from which the sample has been drawn. This again is a difficult problem in free-access areas. In an urban park, where many of the users tend to be small, active children, if the number of users is greater than about 50, it is impossible to achieve a precise count from the ground. The population will not stand still long enough! A solution for treeless areas might be to take air photographs; however, most parks are not treeless. Remote sensing techniques could theoretically be used to spot visitors under trees, but they would be unable to distinguish visitors from their pet dogs.

An adequate procedure for estimating the total population of visitors in the park at a given time, meanwhile, is to calculate the difference between the number who have entered and the number who have left the park up to that time. This is a simple matter, assuming that patterns of access to the park have been determined already for the purpose of visitor sampling. Another method compatible with sampling at the park perimeter is to inquire during interviews what has been the length of a party's stay in the park. (If interviews are conducted with visitors as they arrive, one would ask how long the party expects the visit will last. This would, of course, produce less reliable information than if the visit were already completed.) The use period might then be divided into very small "moments" (five or ten minutes each) during which each visiting party claims to have been present or absent from the park. The use curve would then be calculated by adding together the membership of each visiting party present at each "moment".

The sampling and use estimation procedures described above could be applied at all interview stations for all visitors entering and/or leaving the park. This would constitute complete coverage of the user population rather than more limited "sampling". Unless the resources available for the survey were very great, complete coverage would not be feasible, and a sampling procedure would be required.

Sampling consists of planned reductions from the total population to a given, known sampling fraction according to a statistically valid procedure: random, stratified, systematic or a combination of these. An example of a random procedure for park visitor sampling would be to station an interviewer at a given exit location only at randomly selected times. A systematic procedure would be to interview every so many visitors or visiting parties passing a given exit location, and/or to do this at regularly spaced intervals of time. In this context, a stratified sample would consist of allocating equal proportions of interview time to each exit location. Another possibility for stratification would be to conduct interviews on different days of the week, and/or at different times of day, since use patterns change over time.

The actual procedure used to sample visitors to the four selected parks in Ottawa was a systematic, stratified sample of visitors to each of the four parks during the summer use season. It was systematic in that, on heavy use days, every other or every third party was interviewed at each exit location. It was stratified such that an equal amount of time was spent at each exit location on a rotating basis, with each location covered at least some time during each interviewing hour. Also, because of the structure of

leisure time, which affords most households a greater opportunity to be away from their immediate city neighborhoods on weekends, it was anticipated that significant differences might exist between weekday and weekend day park use. Therefore surveys were conducted on both Wednesdays and Saturdays. Unfortunately, in one park (Agincourt), the planned interviews for Saturday coincided with the last day of the supervised park program season. This was also a cool day. So few visitors came that the planned interviews could not be carried out. Thus, the total number of interview days turned out to be seven rather than eight. There was also a tendency toward fewer visitors to be present in the other three parks on Saturdays. However, in these other three situations there were ample visitors present to carry out the planned surveys.

Because of limited staff available to conduct the park user survey, each week was devoted to a different park, with resulting differences in the weather conditions prevailing on each interview day. It has been assumed by the author that the weather might affect the magnitude of visits on a given day, but that the characteristics of the visits, such as the activities engaged in, mode of transportation used to reach the park, and so on, would not be significantly affected by changes in the weather. This assumption was necessary in order to complete the analysis, but the possi-

ibility that the weather might have affected some aspects of visits other than the sheer magnitude of visitors in the park at a given time, must be borne in mind.

The small number of staff used to assist the author in the survey was recruited ad hoc by reassignment from other duties and by the use of volunteers. Thus, the number of interviewers available on a given day was variable. Despite this problem, a remarkably stable sampling fraction was achieved for each interview day.

Sampling Fractions

It will be recalled from Chapter V that the park user survey procedure involved selection of a number of access points, or, since interviews were conducted with visitors leaving the park, "exit locations", the number of which was determined by the geographic controls on circulation near the park periphery. Since the number of exit locations was objectively given, and since the number of interviewers was always less, on a given day, than the number of such locations, only a fraction of the exit locations could be covered at any one time.

In order to cover all exit locations at least part of the time (and also to discourage visitors from long, distracting conversations with interviewers), interviewers were rotated from one exit location to the next at regular intervals of

time. This meant that some proportion of every hour of interview time was not spent interviewing, but rather in travelling from one control point to the next.

In some parks, on some days, there were so many visitors compared to available survey personnel, that not all the visitors leaving a given exit location during a given time period could be interviewed. In such situations it was necessary to interview every third, every fifth, or some other fraction of the parties passing by a given exit point.

An estimate of the sampling fraction achieved on a given day could be made, based on the above considerations. The proportion of the total population of visitors on that day which "should have been" interviewed would be the product of the proportion of those passing the control point which were approached for an interview, and the proportion of each hour spent actually interviewing as opposed to travelling from one control point to the next, and the proportion of all exit locations being covered at any one time.

The utility of knowing the "sampling fraction" is that it is the inverse of the "raising fraction". Starting from the number of park users sampled, it is possible to calculate the total number of users who visited the park on the given interview day. Note, however, that the sampling fraction provides information only on the proportion of users who "should have been" interviewed. If several parties left in close succession, or refused to be interviewed (the actual

refusal rate was a low 5 per cent), or spent so much time being interviewed that the interviewer missed the next party that was to be interviewed, then the number actually interviewed would be less (as it invariably was) than the number which "should have been" interviewed. The true sampling fraction would therefore be lower than the estimated sampling fraction, and hence the estimated total number of visitors to the park would be lower than the actual total.

Estimates of total use based on sample data and the "raising fraction" will be discussed further, below. For the reasons noted above, such estimates are invariably conservative.

The calculation of the sampling fraction also depends upon whether the use is to be measured as the total number of visits occurring on a given day, or the total number of visitors using the park that day. If a visitor came more than once, the former number would be larger than the latter. Use estimated as the total number of visits would therefore be further underestimated by the interview procedure used in this survey. In this survey, each visiting party were asked whether they intended to return again later in the day. Frequently, the answer was affirmative. When and if they did return, they were asked not to repeat an interview.

Visitors could circumvent the policy against repeat interviews, if they wished, by going to another interviewer

the next time they left the park. A few such cases were discovered when it was found that two or more interviews were with respondents who gave identical home addresses. The regular pattern of rotation of the interviewers, being predictable, also provided opportunity for park users so inclined, to bias the results in other ways, for example by leaving past an exit location where there was no interviewer stationed at the time.

Despite the numerous deficiencies which have been mentioned, the park user survey was unquestionably successful in obtaining a representative sample of park users in each park on the given interview days. The numbers of interviews completed and of individuals comprising the parties interviewed are presented in Table 46.

TABLE 46

NUMBERS OF INTERVIEWS COMPLETED AND OF INDIVIDUALS
SAMPLED BY DAY OF WEEK AND BY PARK

	Wednesday		Saturday	
	Interviews	Individuals	Interviews	Individuals
McNabb Park	117	303	33	80
Anglesea Square	33	70	23	65
Agincourt Park	31	69	--	--
Hawthorne Park	62	146	36	73

Given that a stratified systematic procedure was used to select respondents in the park user survey, and since with minor exceptions there is no reason to believe that the results were biased by use of the systematic rather than a more nearly random procedure, the results of the survey may be regarded as statistically valid, at least for relatively simple statistical tests of significance. This conclusion can be justified with reference to a graph of "Student's T" which tests the significance of standard errors and many other common statistics. The significance levels of the Student's T graph begin to level off at between 5 and 10 degrees of freedom, and become virtually horizontal at between 20 and 30 degrees of freedom. The minimum number of interviews conducted was 23 in Anglesea Square, on a Saturday. If there were, for example, a correlation between two variables obtained from the Saturday interviews in Anglesea Square, the number of degrees of freedom of the correlation coefficient would be 21. A similar coefficient would not be more or less statistically significant if it had been based on 100 observations!

The actual sampling fractions which "should have been" achieved, along with the conservative estimates of total park use based upon these idealistic sampling fractions, are summarized for each interview day in Table 47. This table

shows that, although there were wide discrepancies in the numbers of interviews completed from one day to another, and despite differences in numbers of staff available and numbers of exit locations to be staffed, there was a surprisingly similar sampling fraction from day to day. The one major exception was Agincourt Park, which because of relatively few exit locations and light use, was more substantially covered than the others.

TABLE 47

SAMPLING FRACTIONS AND ESTIMATED TOTAL VISITS TO SELECTED PARKS
BY INTERVIEW DAY

Park Name	Day	Parties Sought	Interv. time per hr.	Exits cov'd	S. F. no.	%	Est'd Visits
McNabb	7/29(Wed)	1/3	40/60	3/5	2/15	13	878
	8/1 (Sat)	1/1	50/60	1/5	1/6	17	198
Anglesea	8/5(Wed)	1/1	50/60	2/7	5/21	24	139
	8/8 (Sat)	1/1	48/60	1/6	2/15	13	173
Agincourt	8/19 (Wed)	1/1	48/60	2/4	2/5	40	78
	-----	--	----	---	---	---	---
Hawthorne	8/12 (Wed)	1/3	50/60	2/5	1/9	11	558
	8/15 (Sat)	1/1	50/60	1/5	1/6	17	210

The field surveys of urban parks use in Ottawa resulted in estimates of total use based on the "raising fraction" of the samples, as discussed above. At the same time, while the interviews were being conducted, the author counted the actual number of visitors in the selected parks on approximately an hourly basis. The two kinds of information may now be compared as a test of validity of park use estimates calculated according to the "raising fraction" of each sample.

When interview traffic was too heavy, counts of the visitors in the park were not feasible. In lighter use periods, counts could be made at intervals even more frequent than hour by hour. There was thus, unfortunately, an inverse relationship between actual peak use times and the accuracy of user counts. Furthermore, as has been pointed out previously, the larger the number of visitors, the more difficult the task of achieving an accurate visitor count, because of the energetic movements especially among the younger park users.

Nevertheless, the user counts and peak use estimates made during the visitor surveys were the best available measure of use. The relationship between these counts and estimates from the survey based on a given "raising fraction" has already been discussed (see Chapter V).

Use Estimates by Park Supervisors

It was conventional practice in the Ottawa park system for supervisors to record use in terms of numbers of visitors in the park at peak hours. These records could constitute a basis for comparing rates of use throughout the park system, assuming that the estimates of peak use made by the supervisors were accurate. The following table compares the figures provided by park supervisors for the days when interviews were conducted, compared with the figures independently arrived at by the author on these same days. There was, as is obvious from the figures, no consultation between supervisors and the author in this regard.

TABLE 48

COMPARISON OF PEAK USE FIGURES: PARK SUPERVISOR ESTIMATES VS. ESTIMATES BY AUTHOR

	McNabb		Anglesea		Agincourt		Hawthorne	
	Wed	Sat	Wed	Sat	Wed	Sat	Wed	Sat
<u>Supervisor</u>								
MORN	43	closed	73	97	29	22	closed	25
AFT	95	closed	151	154	220	76	closed	35
EVE	62	closed	406	none	93	none	closed	none
<u>Author</u>								
MORN	160	25	20	12	35	5	55	35
AFT	260	100	75	90	49	3	100	60
EVE	100	27	80	19	84	-	30	none

Numerous discrepancies appear in the two sets of figures. Two days designated by the park supervisors as "closed" to park use were two of the days during which use was the highest as observed by the author. The supervisors did not consistently overestimate peak use nor did they consistently underestimate the figures in comparison with the author's observations: the supervisors' estimates were high in two parks and low in the other two.

Supervisors' estimates of use were made available to the author for the entire 1970 park use season. If these estimates could be considered reliable, a great fund of useful information would therefore be available. However, in comparing the observed attendance with supervisors' estimates in the four selected parks, the author concluded that the figures supplied by supervisors could not be relied upon to indicate actual levels of park use. This conclusion does not imply criticism of the supervisors' efforts. The author also experienced difficulty in attempting to count users, especially at peak times, as has been noted. The responsibilities of a supervisor in a crowded park are far more distracting than those of an interviewer. It would seem that specialized personnel must be assigned to the task if accurate use figures are to be achieved on a systemwide basis.

The form which supervisors were required to fill out is quite detailed, covering age distributions and activities

of visitors in addition to their total numbers. A sample form is appended. Given that supervisors apparently were unable to estimate total numbers of visitors accurately, the detail required in this form might be a source of frustration to a supervisor.

Measuring Distances

The method of estimation of "spatial gradients" for the four parks was simple, in keeping with the modest means available for the study. First, a "zone of influence" of each park was identified according to the addresses provided by visitors interviewed. The outer limits of each zone of influence were placed along major streets in such a way as to include all but one of the respondents' addresses. In other words, the visit rate from outside the identified "zone of influence" was essentially nil.

Within each zone of influence, the locations of specific respondent addresses were interpolated from the Ottawa City Directory, which specifies addresses at street intersections, and plotted on a base map provided by the National Capital Commission at a scale of 1":200'. Distances were measured on this same base map along streets and sidewalks. It was further assumed that children could cut through neighbors' back yards to reach the park, unless a fence prevented them. No attempts were made to plot the actual routes followed by children to reach the park. However, the

careful distance measurements made by the author, if somewhat arbitrary, are certainly closer to actual distances walked than could be estimated using concentric circles of straight-line distances, and are also closer to the truth than estimates based only on street distances.

The maps of respondent address locations and walking distances (which also apply to bicycling distances, the only other significant means of transportation used to reach these parks) were used to estimate the distance of each respondent's home from the interview location (the edge of the park). These distances were estimated to the nearest 10 feet.

The contour lines were further used as a basis for dividing the zones of influence into a number of "distance zones" within which rates of visitation could be estimated. After some experimentation, zones were selected which reflected a factor of distances squared: 100 to 400 feet, 400 to 900 feet, 900 to 1600 feet, 1600 to 2500 feet, and 2500 to 3600 feet from each park. Distances less than 100 feet were not considered; any visitors coming from this distance as well as the small areas included in this "zero" distance zone, were lumped into the first zone (100 to 400 feet). Depending on the park being considered, there were few if any residences located within 100 feet of interview locations. The main reason for consolidating close-in ob-

servations in this way was simply for convenience, since results were plotted on logarithmic graphs, and to consider distances less than 100 feet would require consideration of an additional order of magnitude (from 10 to 100 feet) for which there would be insufficient data of insufficient accuracy.

Visit rates should properly have been calculated as a ratio of park visits to population residing within each distance zone. It proved far simpler to measure the area included in each zone, and to calculate the visit rate as a ratio of visits per unit area. Again, in a more substantially funded project the proper calculations could have been made. The method used for the present study could not take into account local variations in non-residential land use or in residential population density. Nevertheless, the method was fast and simple, and did provide a general idea of visit rates, and consequently of the effects of distance on these rates. In fact, the results obtained were clear enough, as evidenced by Figures 19 and 20, that further refinement of the method could hardly lead to any substantial modification of the conclusions derived therefrom.

Household Survey

The sampling procedure for the household survey was straightforward; it did not require overcoming such sampling difficulties as exist for visitors to free-access public parks.

The procedure used does constitute a minor improvement compared with some other studies. Rather than accept a census division as constituting the study area, the procedure was to plot the addresses of the park users who were interviewed, and to draw a boundary line around the area containing these addresses as constituting the "zone of influence" of each park. Within these zones of influence, households were selected at random from the Ottawa City Directory, 1971; a 5 per cent sample was selected in this way using a table of random numbers for the selection.

The households selected were sent mail questionnaires. Each questionnaire was given a code number for identification. After two weeks, a follow-up letter was sent to those households which either had or had not returned the questionnaire, or had removed the code number before returning the questionnaire. The response rate achieved by this procedure was surprisingly good: 35% of the households which received questionnaires returned them.

Table 49 shows the number of households listed, the number of questionnaires sent, and information on the return of questionnaires from each area.

The response to the mail questionnaire survey was surprisingly good, as shown by Table 49. The response rate was a high 38.8%. The return is especially successful considering that, because of higher population density in the

TABLE 49
HOUSEHOLD SURVEY QUESTIONNAIRE RETURNS

	McNabb	Anglesea	Hawthorne	Agincourt
Number of households in zone of influence	2932	3121	735	1947
Number of households in sample	148	154	37	100
Returned by post office	22	18	0	5
Net sample	126	136	37	95
Responses received (%)	33 (26%)	48 (36%)	19 (51%)	53 (56%)
Useable questionnaires (% of sample)	28 (22%)	36 (26%)	19 (51%)	51 (54%)

lower income areas, these areas were weighted more heavily in terms of the number of questionnaires sent. The high interest shown by these rates of return demonstrates that urban parks are a subject of lively concern, and that a survey of this kind can succeed. The questionnaire is appended. It was a long questionnaire, 12 pages in all, requiring over 200 separate responses, which makes the survey return still more gratifying.

Not all of the responses could be used as sources of data, unfortunately. Five from the McNabb area, twelve

from the Anglesea area, and two from the Agincourt area either were in letter form, or contained so little information on the questionnaire that they could not be used. Balancing this loss somewhat was the receipt of eight questionnaires fully completed, from which the address code had been removed. The net loss was 11 questionnaires, so that in the final analysis 36% of those who received questionnaires returned them in usable form. Relative lack of education and socio-economic distress appears to have taken a toll, not only in the response rate, but also in the rate of usable questionnaires provided by respondents.

Household questionnaire forms were coded by address. This provided a double advantage: when the questionnaire was returned the author could keep track of those who had and had not responded. A part of the high rate of return might stem from the fact that the follow-up letter which was sent (also appended) implied that such a record was kept. A second advantage of address coding was that the distance of each responding household from the sample park could be ascertained. Thus, frequencies of park visits could be compared to the distance of each household from the park, as were the visit rates obtained from the park user survey.

APPENDIX III

QUESTIONNAIRES

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OTTAWA CITY PARK USE SURVEY - ENQUÊTE SUR L'UTILISATION DES PARCS
 time: 1a 1b 2a 2b 3a 3b 4a 4b 5a 5b 6a 6b

1. Number of persons in group of visitors/ nombre de personnes dans le groupe de visiteurs: _____ .

2. Is the visit directly from home to the park and back?/ Etes-vous venus directement de chez vous, et allez-vous retourner directement à la maison en sortant du parc? yes ☐ oui no ☐ non

If NO, describe itinerary/ si NON, précisez l'itinéraire:

3. Your address/ votre adresse: _____

4. At what time did you first enter the park today?/ Heure de votre première arrivée dans le parc aujourd'hui: _____ .

Will you be coming back again?/ Allez-vous revenir?

If YES, why are you leaving now? yes ☐ oui no ☐ non
 Si OUI, pourquoi sortez-vous maintenant?

5. How often do you visit this park?/ Fréquence des visites à ce parc: ☐ every day ☐ every week ☐ less often
☐ tous les jours ☐ chaque semaine ☐ moins fréquemment

6. If this park were not here, what would you have done instead of coming here?/ Si ce parc n'existait pas, qu'est-ce que vous auriez fait au lieu de venir ici?

7. Group table/ tableau du groupe AGES-M AGES-F

immediate family/famille

other relative/parent

friend/ami

other/autre:

on foot/à pied

bicycle/bicyclette

carriage/carrosse

other/autre:

swimming pool/piscine

table games/jeux de table
sports

swings, slides/balançoires,
glissoires/etc.

walk dog/promener le chien

watch children/surveiller
les enfants

meet friends/réunion d'amis

other/autre:

8. Equipements ou programmes désirés/ facilities or programmes desired:



OTTAWA 2, CANADA

DÉPARTEMENT DE GÉOGRAPHIE

DEPARTMENT OF GEOGRAPHY

2 August 1971

Dear resident of Ottawa-Hull,

The enclosed questionnaire is designed to provide more knowledge, and a better understanding, of the use of urban parks in Ottawa-Hull. The results of this important survey will appear in a Ph.D. dissertation being prepared for the School of Graduate Studies of the University of Ottawa. Your full cooperation in filling out and returning the enclosed questionnaire is cordially invited.

Your household has been chosen at random for inclusion in the survey. By participating, you will help assure that your neighborhood is accurately represented in the survey results.

When you have completed the enclosed questionnaire, please return it in the envelope provided, if possible, by August 16th. Thank you very much for your cooperation and assistance.

Sincerely,

Robert Rugg

(f r a n ç a i s a u v e r s o)

- G) A préciser, quels types d'équipements sportifs et récréatifs manquent le plus dans votre communauté, à votre avis?

- H) Dans l'espace réservé, faites-moi vos autres commentaires au sujet de l'utilisation des parcs urbains d'Ottawa-Hull.

- I) S'il vous plaît, indiquez le niveau approximatif du revenu total de l'ensemble de votre ménage durant les douze derniers mois.

- 0 moins de \$3,000
- 1 de \$3,000 à \$5,000
- 2 de \$5,000 à \$7,000
- 3 de \$7,000 à \$10,000
- 4 de \$10,000 à \$15,000
- 5 plus de \$15,000

Avant de remettre le questionnaire, veuillez noter la date ici:

jour mois

Merci de votre participation!

Household Questionnaire Survey

Part I- OUTDOOR RECREATION ACTIVITIES

1 yes 0 no

How spent: _____

B) Have you taken, or do you intend to take a vacation this year
(during 1971)? 1 yes 0 no

How spent: _____

Dates: from to
 day month day month

D) Les personnes de votre ménage sortent-ils régulièrement pour aller voir les compétitions sportives, soit de plein air, soit à l'intérieur?

1 oui 0 non

Si oui, quel genre de sport vont-ils voir, et à quel endroit? Genre de sport: _____

Endroit: _____

E) Indiquez, s'il vous plaît, les heures de la journée durant lesquelles les membres de votre ménage sont à l'écoute de la télévision.

0 Nous n'avons pas de télévision

1 de 10:00 a.m. à midi

2 de midi à 2:00 p.m.

3 de 2:00 p.m. à 4:00 p.m.

4 de 4:00 p.m. à 6:00 p.m.

5 de 6:00 p.m. à 8:00 p.m.

6 de 8:00 p.m. à 10:00 p.m.

7 de 10:00 p.m. à minuit

Commentaire: _____

F) Quelle est votre opinion des possibilités pour les loisirs de plein air à votre voisinage, pour chacun des groupes d'âge suivants?

. . . pour les personnes âgées:	Des possibilités . . .					ne sais pas
	excellentes	bonnes	moyennes	pauvres	inexis- tantes	
de moins de 6 ans	4	3	2	1	0	x
de 6 à 12 ans	4	3	2	1	0	x
de 13 à 18 ans	4	3	2	1	0	x
de 19 à 24 ans	4	3	2	1	0	x
de 25 à 44 ans	4	3	2	1	0	x
de 45 à 64 ans	4	3	2	1	0	x
de 65 ans et plus	4	3	2	1	0	x

D) Winter weekend activities. The following is a list of outdoor recreation activities commonly engaged in on weekends in winter. Please look over the list, then circle the numbers of the activities engaged in by you or by other members of your household last winter.

1 ice skating	6 tobogganing
2 hockey	7 ice fishing
3 alpine skiing	8 snowmobiling
4 cross-country skiing	9 driving for pleasure
5 snowshoeing	10 nature study
11 other (please specify): _____	

Now, please go back over the list, and underline the name of your favorite winter weekend activity. If other members of your household have favorites that are different from yours, underline their favorites, too.

E) Spring weekend activities. Please repeat the same procedure for the following list of outdoor recreation activities commonly engaged in during the spring.

1 golf	10 picnicking
2 nature study	11 camping
3 fishing	12 visit to cottage
4 gardening	13 power boating
5 hiking	14 canoeing, rafting, or kayaking
6 bicycle riding	15 rowing
7 horseback riding	16 sailing
8 motorcycling	17 kite flying
9 driving for pleasure	18 other (please specify): _____

Please be sure you have circled the numbers of all the activities engaged in by you or any other members of your household during the past spring season, and underlined your household favorite or favorites.

Quelle(s) école(s) est-ce que fréquentent les jeunes personnes de votre ménage?

Quelle langue parlez-vous à la maison?

1 anglais 2 français 3 autre (précisez):

B) Outre l'utilisation des parcs, participez-vous aux activités paroissiales, au programme du Y.M.C.A., etc.? Êtes-vous membres de clubs privés tels les clubs de chasse, de pêche, de golfe, de tennis, de canotage? Fréquentez-vous les entreprises commerciales telles que les locations de bateaux, les pistes de go-carts, etc.? Les gens de votre ménage participent-ils à n'importe quel autre organisme qui vous permet de vous livrer aux loisirs de plein air?

1 activités paroissiales

2 programme du Y.M.C.A.

3 club(s) privé(s) (précisez de quelle activité il s'agit):

4 entreprises commerciales (précisez le type d'activité):

5 autres organismes (précisez):

6 Nous ne participons aux loisirs de plein air que dans les parcs publics.

C) S'il y a des enfants ou des adolescents chez vous, jouent-ils ou se réunissent-ils souvent

. . . sur le trottoir? 1 oui 0 non

. . . dans la rue? 1 oui 0 non

. . . dans la cour de derrière? 1 oui 0 non

. . . dans des lots vacants
près de chez vous? 1 oui 0 non

F) Summer weekend activities. Please repeat the same procedure once again for this list of summertime activities.

1 swimming	15 hitchhiking for pleasure
2 picnicking	16 rock climbing
3 camping	17 canoeing, rafting, or kayaking
4 visit to cottage	18 rowing
5 visit to summer resort	19 sailing
6 gardening	20 water skiing
7 nature study	21 cruising in power boat
8 golf	22 attending outdoor concerts and plays
9 fishing	23 kite flying
10 hiking	24 other (please specify):
11 bicycle riding	
12 horseback riding	
13 motorcycling	
14 driving for pleasure	

G) Fall weekend activities. Finally, please repeat the same procedure for this list of outdoor recreation activities available in the autumn season.

1 hunting	9 camping
2 hiking	10 visit to cottage
3 bicycle riding	11 rock climbing
4 horseback riding	12 canoeing, rafting, or kayaking
5 motorcycling	13 rowing
6 driving for pleasure	14 kite flying
7 nature study	15 other (please specify):
8 picnicking	

Si vous n'avez visité aucun de ces parcs, pourquoi?

Si vous en avez visité, dans quelle(s) saison(s) de l'année avez-vous fait la plupart des visites?

- 1 en hiver 2 au printemps 3 en été
4 en automne 5 pas de saison spéciale, tout le long de l'année

Quelle a été la fréquence des visites cette année?

- 1 peu souvent (une ou deux fois seulement)
2 une fois ou deux par saison
3 une fois par mois environs (dans la saison indiquée)
4 au moins une fois par semaine " " " "

E) Les gens de votre ménage ont-ils visité l'un ou plusieurs des parcs provinciaux suivants au cours des cinq dernières années (années 1967, 1968, 1969, 1970, 1971)?

1 Mont Tremblant	3 Algonquin
2 La Vérendrye	4 Adirondack (N.Y.)

3ème Partie- AUTRES INFORMATIONS

A) Renseignements sur le ménage. Quel est le nombre total de personnes qui habitent chez vous actuellement? _____

Sur ce total, combien sont

- des personnes âgées de 65 ans et plus? . . . _____
des adultes entre 45 et 64 ans? _____
des adultes entre 25 et 44 ans? _____
des jeunes de 19 à 24 ans? _____
des jeunes de 13 à 18 ans? _____
des enfants entre 6 et 12 ans? _____
des enfants de moins de 6 ans? _____

H) If there are children in your household, did any of them attend an overnight summer camp last summer (1970)?

1 yes

0 no

If any of your children are attending overnight summer camps this year (1971), please give the dates when they have been or will be away at camp:

from to
 day month day month

I) Daily outdoor activities. Aside from the activities available on weekends listed above, some outdoor recreation activities are commonly engaged in on weekdays. They may occur in the early morning, at lunch hour, or in the late afternoon or early evening. Please circle the numbers corresponding to those activities engaged in by you or by other members of your household on ordinary weekdays.

- 1 walk the dog
- 2 go for a walk (without dog)
- 3 picnic lunch near place of work
- 4 accompany very young children to park
- 5 summer park program for school-age children
- 6 summer day camp
- 7 walk to and from work
- 8 ride bicycle to and from work
- 9 sunbathe on sunny afternoons
- 10 backyard barbecue
- 11 sit quietly on balcony or veranda, or in yard
- 12 use play equipment or swimming pool in own yard
- 13 neighborhood games such as hide-and-go-seek
- 14 snow play such as building snowman or igloo

S'ils n'ont visité aucun de ces parcs au cours des douze mois passés, pourquoi? _____

(La réponse faite, passez à la question D)

S'ils ont visité l'un ou plusieurs de ces parcs, quel est le but principal de leurs visites, normalement?

- 1 garder des enfants
- 2 rencontrer des amis
- 3 participer aux sports organisés
- 4 participer aux autres activités organisés
- 5 autre but (préciser): _____

En quelle saison(s) ont lieu la plupart des visites?

- 1 en hiver 2 au printemps 3 en été
- 4 en automne

Durant cette période, quelle est la fréquence moyenne des visites?

- 1 peu fréquent
- 2 une fois ou deux par mois environs
- 3 une fois par semaine environs
- 4 presque tous les jours

Par quel moyen de transport se rendent-ils dans le parc?

- 1 à pied
- 2 à bicyclette
- 3 en autobus
- 4 en auto
- 5 autre (précisez): _____

D) Les gens de votre ménage ont-ils visité l'un ou plusieurs des parcs régionaux suivants au cours des douze derniers mois?

1 Ferme Expérimentale Centrale et Arboretum	
2 la Gatineau	5 Rockcliffe
3 Green Creek	6 Shirley's Bay
4 Lac Leamy	7 Vincent Massey

J) The following types of equipment are among those used for certain outdoor recreation activities. Please indicate the types of equipment possessed by you or other members of your household, by circling the appropriate numbers.

1 car	14 rowboat
2 bicycle	15 sailboat
3 swing	16 motor boat
4 backyard swimming pool	17 bathing suit
5 baseball and bat	18 ice skates
6 basketball	19 hockey stick
7 football uniform	20 hockey uniform
8 sleeping bag	21 toboggan or sled
9 tent	22 snowshoes
10 camper or camp trailer	23 skis
11 fishing tackle	24 snowmobile
12 shotgun or hunting rifle	<u>others</u> (please specify):
13 canoe, rubber raft, or kayak	25 _____
	26 _____

Part II- USE OF PARKS

A) Are there any children under the age of 13 in your household? If not, please go on to question B. If so, did they visit any of the following local neighborhood parks during the past year?

1 Agincourt	7 Hawthorne
2 Ainsley	8 Lafontaine (Hull)
3 Anglesea Square	9 MacDonald Gardens
4 Bordeleau	10 McNabb
5 Copeland	11 Weston
6 Dundonald	12 other local neighborhood park (please specify):

B) En réfléchissant aux parcs de votre voisinage en général, tels les parcs cités dans la question A, comment les qualifiez-vous?

	<u>très</u>	<u>assez</u>	<u>peu</u>	<u>pas du tout</u>
bien-connus	3	2	1	0
facilement accessibles	3	2	1	0
de grande taille	3	2	1	0
beaux	3	2	1	0
bien-équipés	3	2	1	0
sous-utilisés	3	2	1	0
bien-surveillés	3	2	1	0
de confiance	3	2	1	0
encombré (il y a trop de monde)	3	2	1	0

Commentaire: _____

C) Y a-t-il des adolescents chez vous, c'est-à-dire des jeunes gens âgés de 13 à 18 ans? Sinon, passez à la question D. Si oui, est-ce qu'ils ont visité l'un ou plusieurs des parcs suivants durant l'année passée?

1 Agincourt	9 Hawthorne
2 Ainsley	10 Lafontaine (Hull)
3 Anglesea Square	11 LeBreton Flats ("people's park")
4 Bordeleau	12 MacDonald Gardens
5 Brewer	13 McNabb
6 Britannia	14 Mooney's Bay
7 Copeland	15 Moussette (Hull)
8 Dundonald	16 Weston

17 autre (précisez): _____

If they did not visit any of these parks during the past year, why not? _____

(After giving reason why not, go on to question B)

If they did visit one or more of these parks during the past year, did they usually go by themselves, or with someone else? (Circle more than one answer if necessary.)

- 1 by themselves
- 2 with adults from our household
- 3 with teenagers from our household
- 4 with neighbors
- 5 with a babysitter
- 6 other (please specify): _____

During what season(s) of the year did most of the visits take place?

- 1 winter 2 spring 3 summer 4 fall

About how often did they visit the park during this (these) season(s)?

- 1 rarely
- 2 fairly often (about once a week or so)
- 3 often (nearly every day)

How did they travel to get to the park?

- 1 in a pram (baby carriage) or stroller
 - 2 on foot
 - 3 on bicycle
 - 4 other (please specify): _____
- (circle more than one answer if necessary)

S'ils n'ont visité aucun de ces parcs au cours des douze mois passés, pourquoi? _____

(Ayant répondu pourquoi, vous pouvez passer à la question B)

S'ils ont visité l'un ou plusieurs de ces parcs, vont-ils d'habitude seuls ou accompagnés? (Si nécessaire, indiquez plusieurs réponses.)

- 1 seuls
- 2 accompagnés par des adultes de notre ménage
- 3 " " " adolescents de notre ménage
- 4 " " nos voisins
- 5 " " une gardienne
- 6 autre (précisez): _____

Durant quelle(s) saison(s) de l'année ont eu lieu la plupart des visites?

- 1 en hiver 2 au printemps 3 en été
- 4 en automne

Quelle a été la fréquence des visites durant cette période?

- 1 peu fréquentes
- 2 assez fréquentes (une fois par semaine environs)
- 3 très fréquentes (presque tous les jours)

Par quel moyen de transport se sont-ils rendus dans le parc?

- 1 dans une voiture d'enfants
- 2 à pied
- 3 à bicyclette
- 4 autre (précisez): _____

(Indiquez plusieurs réponses s'il y a lieu)

B) Thinking in general about the parks in your neighborhood, such as those listed in question A, how would you describe them?

	<u>very</u>	<u>fairly</u>	<u>slightly</u>	<u>not at all</u>
well-known	3	2	1	0
easy to get to	3	2	1	0
large in size	3	2	1	0
scenic, attractive	3	2	1	0
well-equipped	3	2	1	0
under-used	3	2	1	0
well-supervised	3	2	1	0
safe and secure	3	2	1	0
crowded	3	2	1	0

Comments: _____

C) Are there any teen-agers in your household, that is, young people from 13 to 18 years of age? If not, please go on to question D. If there are teen-agers in your household, did they visit one or more of the following parks during the past year?

1 Agincourt	9 Hawthorne
2 Ainsley	10 Lafontaine (Hull)
3 Anglesea Square	11 LeBreton Flats ("people's park")
4 Bordeleau	12 MacDonald Gardens
5 Brewer	13 McNabb
6 Britannia	14 Mooney's Bay
7 Copeland	15 Moussette (Hull)
8 Dundonald	16 Weston

17 other (please specify): _____

J) La liste suivante est composée de certains équipements de loisir de plein air. Lesquels appartiennent à votre ménage?

1 automobile	14 chaloupe
2 bicyclette	15 bateau à voile
3 balançoire	16 canot-automobile
4 piscine privée	17 costume de bain
5 baseball avec bâton	18 patins
6 ballon panier	19 bâton de hockey
7 tenue de football	20 tenue de hockey
8 sac de couchage	21 toboggan
9 tente	22 raquettes
10 camion ou roulotte de camping	23 skis
11 articles de pêche	24 moto-neige
12 fusil de chasse	<u>autres</u> (précisez):
13 canot, radeau en caoutchou, ou kayak	25 _____
	26 _____

2ème Partie- L'UTILISATION DES PARCS

A) Existe-il des enfants de moins de 13 ans dans votre ménage?
Sinon, passez à la question B. Si oui, est-ce qu'ils ont visités l'un ou plusieurs des parcs de voisinage suivants durant les douze mois passés?

1 Agincourt	7 Hawthorne
2 Ainsley	8 Lafontaine (Hull)
3 Anglesea Square	9 MacDonald Gardens
4 Bordeleau	10 McNabb
5 Copeland	11 Weston
6 Dundonald	12 autre parc de voisinage (précisez):
- _____

If they did not visit any of these parks, why not?

(After giving reason why not, go on to question D.)

If they did visit one or more of these parks, what was (were) the usual purpose(s) of their visits?

- 1 babysitting
- 2 getting together with friends
- 3 organized sports
- 4 other organized activities
- 5 other (please specify): _____

During what season(s) of the year did they go to the park, and about how often?

Season: 1 winter 2 spring 3 summer 4 fall

Frequency: 1 rarely
 2 about once or twice a month(in season)
 3 once a week or so (in season)
 4 nearly every day (in season)

How did they travel to get to the park?

- 1 on foot
- 2 on bicycle
- 3 bus
- 4 car
- 5 other (please specify): _____

D) Did anyone in your household visit any of the following regional parks during the past year?

1 Central Experimental Farm and Arboretum	
2 Gatineau	5 Rockcliffe
3 Green Creek	6 Shirley's Bay
4 Lac Leamy	7 Vincent Massey

H) S'il y a des enfants chez vous, ont-ils fréquenté une colonie de vacances l'an dernier (année 1970)?

1 oui 0 non

Si des enfants de votre ménage participent à une colonie de vacances cet été (année 1971), entre quelles dates seront-ils partis de leur demeure?

du au
jour mois jour mois

I) Loisirs de tous les jours. En plus des activités de fin de semaine, plusieurs sortes d'activités de plein air se poursuivent durant les journées ordinaires de travail ou d'école, très tôt dans la matinée, par exemple, à midi, ou dans la soirée. Parmi les activités suivantes, indiquez celles qui sont pratiquées soit par vous-même soit par les autres personnes de votre ménage.

- 1 promener le chien
- 2 se promener à pied (sans chien)
- 3 pique-nique près du lieu de travail
- 4 accompagner les très jeunes enfants au parc
- 5 pour les écoliers, le programme d'été offert
par le service des parcs
- 6 camp d'été journalier
- 7 marcher au travail à pied
- 8 aller au travail à bicyclette
- 9 bain de soleil en après-midi
- 10 "barbecue" dans la cour de derrière
- 11 se reposer au balcon, à la véranda, ou dans la cour
- 12 utiliser des équipements de jeux d'enfants ou une
piscine dans la cour de derrière
- 13 jeux d'enfants du voisinage tel le "cache-cache"
- 14 jeux de neige, par exemple, construire un bonhomme
de neige ou un igloo

If you did not visit any of them, why not? _____

If you did visit at least one of these parks during the past year, were the visits concentrated in any particular season(s) of the year?

- 1 winter 2 spring 3 summer 4 fall
5 not concentrated (spread evenly through the year)

About how often did the visits take place?

- 1 rarely (just once or twice during the year)
2 once or twice per season
3 about once a month (in season)
4 once a week or more (in season)

E) Have you or any other members of your household visited any of these provincial parks during the past five years?

1 Mont Tremblant	3 Algonquin
2 La Vérendrye	4 Adirondack (N.Y.)

Part III- OTHER INFORMATION

A) Household information. What is the total number of people currently living in your home? _____ Of this number, how many are

- "senior citizens" 65 years and over? . . . _____
adults between 45 and 64 years old? . . . _____
adults from 25 to 44 years old? _____
young adults from 19 to 24 years old? . . . _____
teen-agers from 13 to 18 years old? . . . _____
children from 6 to 12 years old? _____
very young children under 6 years old? . . . _____

F) Activités de fin de semaine en été. Faites la même chose encore vis-à-vis des possibilités en été.

1 natation	15 partir en autostop ("le pouce")
2 pique-nique	16 grimper aux rochers
3 camping	17 canotage
4 visite au chalet	18 chaloupe
5 visiter un hôtel de plaisance	19 bateau à voile
6 jardiner	20 ski nautique
7 étude de la nature	21 promenade en canot-automobile
8 golfe	22 concert et théâtre de plein air
9 pêche à la ligne	23 cerf-volant
10 promenade à pied	24 autre (précisez):
11 promenade à bicyclette	
12 promenade à cheval	
13 motocyclette	
14 promenade en auto	
-

G) Activités de fin de semaine en automne. Encerclez et soulignez de la même façon.

1 chasse	9 camping
2 promenade à pied	10 visite au chalet
3 promenade à bicyclette	11 grimper aux rochers
4 promenade à cheval	12 canotage
5 promenade à motocyclette	
6 promenade en auto	13 chaloupe
7 étude de la nature	14 cerf-volant
8 pique-nique	15 autre (précisez):
-

What school(s) do the children and teen-agers attend?

What language is usually spoken in your household?

1 English 2 French 3 other (please specify):

B) Aside from visits to public parks, do any members of your household participate in parish activities, the Y.M.C.A. program, etc.? Are you members of private clubs such as hunting, fishing, golf, tennis, or canoe clubs, or do you patronize commercial outdoor recreation enterprises such as boat rentals, go-cart tracks, etc. on a regular basis? Do you participate in any other organizations which provide you with opportunities for outdoor recreation?

1 parish activities
2 Y.M.C.A. program
3 private club(s) (please specify the nature of the activity with which the club(s) is (are) concerned):

4 commercial enterprises (please specify the nature of the activity):

5 other organizations (please specify):

0 We only visit public parks for outdoor recreation.

C) If there are children or teen-agers in your household, do they often play or congregate

. . . on the sidewalk?	1 yes	0 no
. . . in the street?	1 yes	0 no
. . . in the back yard?	1 yes	0 no
. . . in vacant lots near your home?	1 yes	0 no

D) Activités de fin de semaine en hiver. Les loisirs de plein air qui peuvent se pratiquer durant les fins de semaine en hiver apparaissent dans la liste suivante. En regardant la liste, encerclez les chiffres qui correspondent aux activités auxquelles vous avez participé (ou les autres membres de votre ménage) l'hiver passé.

1 patin sur glace	6 toboggan
2 hockey	7 pêche d'hiver
3 ski alpin	8 moto-neige
4 ski de fond	9 promenade en auto
5 raquettes	10 étude de la nature

11 autre (précisez): _____

Maintenant, parmi ces activités, soulignez celle qui vous intéresse le plus. Si les autres personnes de votre ménage préfèrent d'autres choix, soulignez leurs choix également.

E) Activités de fin de semaine au printemps. Faites encore la même chose par rapport à cette liste des activités disponibles durant le printemps.

1 golfe	10 pique-nique
2 étude de la nature	11 camping
3 pêche à la ligne	12 visite au chalet
4 jardiner	13 canot-automobile
5 promenade à pied	14 canotage
6 promenade à bicyclette	15 chaloupe
7 promenade à cheval	16 bateau à voile
8 motocyclette	17 cerf-volant
9 promenade en auto	18 autre (précisez):
- _____

N'oubliez pas de souligner les activités de choix.

D) Do you or any other members of your household regularly attend sports events, whether indoors or outdoors?

1 yes 0 no

If yes, what kind of sports do you go to see, and where?

Kind(s) of sports: _____

Place(s) seen: _____

E) Please indicate the times during the day when the members of your household are most likely to be watching television.

0 Do not watch television

1 from 10:00 a.m. to 12:00 noon

2 from 12:00 noon to 2:00 p.m.

3 from 2:00 p.m. to 4:00 p.m.

4 from 4:00 p.m. to 6:00 p.m.

5 from 6:00 p.m. to 8:00 p.m.

6 from 8:00 p.m. to 10:00 p.m.

7 from 10:00 p.m. to 12:00 midnight

Comments: _____

F) What is your opinion regarding the quality of outdoor recreation opportunities in your neighborhood for each of these age groups?

Quality of Outdoor Recreation Opportunities . . .						
. . . for these age groups:	<u>excellent</u>	<u>good</u>	<u>fair</u>	<u>poor</u>	<u>none</u>	<u>don't know</u>
children under 6 yrs.	4	3	2	1	0	x
children 6-12 yrs.	4	3	2	1	0	x
teen-agers 13-18 yrs.	4	3	2	1	0	x
young adults 19-24 yrs.	4	3	2	1	0	x
adults 25-44 yrs.	4	3	2	1	0	x
adults 45-64 yrs.	4	3	2	1	0	x
"senior citizens"	4	3	2	1	0	x

Enquête auprès des ménages

c) Quelle serait pour vous la vacance idéale? _____

G) Specifically, what types of park facilities or recreation opportunities do you feel to be most lacking in your community?

H) Please use the following space for any other comments you may wish to make regarding the use of urban parks in Ottawa-Hull.

I) Would you please indicate the approximate level of total income received and spent by your household as a whole during the past twelve months?

- 0 less than \$3,000
- 1 between \$3,000 and \$5,000
- 2 between \$5,000 and \$7,000
- 3 between \$7,000 and \$10,000
- 4 between \$10,000 and \$15,000
- 5 over \$15,000

Before returning the questionnaire, please note the date on which you completed filling it out:

 day month

Thank you very much for your cooperation!



OTTAWA 2, CANADA

DÉPARTEMENT DE GÉOGRAPHIE

DEPARTMENT OF GEOGRAPHY

le 2 août 1971

Aux résidents d'Ottawa-Hull.

Le but du présent questionnaire est de me fournir plus de connaissances et de compréhension sur l'utilisation des parcs urbains d'Ottawa-Hull. Les résultats de l'enquête seront compilés dans une thèse de doctorat inscrite à l'Ecole des Etudes Supérieures de l'Université d'Ottawa. Il va sans dire que votre participation est très importante, ainsi, je vous invite à remplir le questionnaire.

Votre ménage a été choisi au hasard. Ceci fait que, en participant à l'enquête, vous contribuez à ce que votre quartier soit bien représenté dans l'étude entreprise.

Quand vous aurez complété le présent questionnaire, veuillez me l'expédier dans l'enveloppe affranchie ci-jointe avant le 16 août.

Merci à l'avance pour votre attention et de votre précieuse collaboration.

R. Rugg

Robert Rugg

(English on reverse side)



OTTAWA 2, CANADA

DÉPARTEMENT DE GÉOGRAPHIE

DEPARTMENT OF GEOGRAPHY

19-VIII-1971

Dernièrement vous avez probablement reçu un questionnaire au sujet de l'utilisation des parcs urbains d'Ottawa-Hull.

Jusqu'à maintenant, le nombre de réponses est très encourageant; toutefois, certains n'ont pas encore répondu au questionnaire. Comme j'attache une grande importance à votre participation, j'aimerais savoir si vous avez reçu un questionnaire; sinon, il me fera plaisir d'en expédier un autre. Vous pouvez obtenir une autre copie simplement en me retournant la présente lettre.

S'il n'est pas le cas, je vous demande de comprendre toute l'importance de votre participation et de me retourner le plus tôt possible (pour le 1er septembre) le questionnaire que vous possédez. Il viendra compléter l'enquête déjà entreprise et les résultats vont constituer une partie intégrale du rapport ultérieur.

Enfin, si vous avez déjà expédié votre réponse, je regrette l'inconvénient de ce rappel et je vous remercie encore une fois de votre gracieuse collaboration.

Recently, you probably received a questionnaire to be filled out in connection with my study of the use of urban parks in Ottawa-Hull. So far, the results of the survey have been very encouraging, but to date I have not received your reply.

Needless to say, your participation is just as important as that of others to the success of the survey. If you have not already done so, I hope you will find time to answer your questionnaire in the near future (by September 1st).

Meanwhile, if I can be of assistance in providing you with another copy of the questionnaire, let me know by returning this letter in the enclosed envelope. You will receive an additional copy of the questionnaire by return mail.

Finally, if you have already completed and returned the questionnaire, please excuse this reminder, and accept once again my thanks for your very helpful participation.

Robert Rugg

DEPARTMENT OF RECREATION AND PARKS
CORPORATION OF THE CITY OF OTTAWA
214 Hopewell Avenue, Ottawa, Ont.

K1S 2Z5

PLAYGROUND LEADERS WEEKLY REPORT

PLAYGROUND				WEEK ENDING				
DAILY ATTENDANCE	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Weekly total
	A.M. aft. eve.	A.M. aft. eve.	A.M. aft. eve.	A.M. aft. eve.	A.M. aft. eve.	A.M. aft. eve.	A.M. aft. eve.	
Boys under 13								
Girls under 13								
Boys 13 to 18								
Girls 13 to 18								
Adults								
Spectators & visitors								
weather								
Handicapped children								
USE OF PLAYGROUND EQUIPT.&FACILITIES								
ball diamonds								
building								
wading pool								
basketball crts.								
volleyball area								
swings								
sand box								
slide								
climber								
football, soccer								
ping pong								
small games								
arts & crafts								
play balls								
other:								

APPENDIX IV

DATA

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Park User Data

Column no.	Variable	Range
1-3	interview number	
4	park number	McNabb = 1 Anglesea = 2 Agincourt = 3 Hawthorne = 4
5	day of interview	Wed = 1 Sat = 2
9-10	hour of interview	09-20
11-12	number in party	
13	itinerary	back-and-forth: 1 multi-destination: 0
19	length of stay	0-5 minutes: 0 6-10 " 1 11-15 " 2 16-20 " 3 21-30 " 4 31-50 " 5 51-75 " 6 76-100 " 7 101-180 " 8 181+ " 9
20	plan to return later?	yes: 1
21	frequency of visits	daily: 3 weekly: 2 less often: 1
22	language in which interview conducted:	French 1 English 0
23-26 31-33	distance from respondent's home (in feet) card no.	
34	sex	female: 0 male: 1
35	age 65+	
36	45-64	
37	25-44	
38	19-24	
39	13-18	
40	6-12	
41	age under 6	

Park User Data (cont'd)

Column no.	Variable
42	respondent
43	immediate family of respondent
44	extended family of respondent
45	friend of respondent
46	other relationship to respondent
47	on foot
48	bicycle
49	baby carriage
50	other mode of transportation
51	swimming
52	table games
53	sports
54	swings, slides, etc.
55	walk dog
56	watch children
57	meet friends
58	other activities

PARK USER SURVEY DATA

1	2	3	4	5	6	7	8
0011100109011	30300150	0011	1 1	1	11		
0021100209011	00300150	0021	1 1	1	1		
0031100309011	30100680	0030	1 1	1	11		
0041100410011	40300140	0041	1 1	1	1		
0051100510080	90300110	0050	1 1	1	1 11		
0051100510080	90300110	0060	1	1	1 1		
0051100510080	90300111	0070	1	1	1 1		
0051100510080	90300110	0080	1	1	111 1		
0051100510080	90300110	0090	1	1	111		
0051100510080	90300110	0101	1	1	1 11		
0051100510080	90300110	0111	1	1	1 1		
0051100510080	90300110	0121	1	1			
0051100510080	40300190	0131	1 1	1		1	
0061100610011	90300320	0141	1 1	1		1	
0071100710030	90300320	0151	1	1 1	1		
0071100710030	90300320	0161	1	1 1	1		
0081100810011	00301200	0170	1 1	1		1	
0091100910011	60300190	0181	1 1	1	1		
0101101010020	00300160	0190	1 1	1		1	
0101101010020	00300160	0200	1	1		1	
01111011110031	50301210	0211	1 1	1			
01111011110031	50301210	0221	1 1	1			
01111011110031	50301210	0230	1	1			
0121101210011	40310700	0241	1 1	1	1		
0131101310031	40300440	0251	1 1	1		1 1	
0131101310031	40300440	0261	1	1		1	
0131101310031	40300440	0271	1 1	1	1		
0141101411041	11300100	0280	1 1	1	1 1 1 1		
0141101411041	11300100	0290	1	1	1 1	1	
0141101411041	11300100	0300	1	1	1 1	1	
0141101411041	11300100	0311	1	1	1 1	1	
0151101511011	10300090	0321	1 1	1		1	
0161101611021	80300800	0330	1 1	1	1		
0161101611021	80300800	0340	1	1	1		
0171101711011	00102230	0351	1 1	1		1	
0181101811031	70301860	0360	1 1	1	1		
0181101811031	70301860	0370	1	1	1		
0181101811031	70301860	0381	1	1	1		
0191101911011	41300300	0390	1 1	1		1	
0201102011031	71300180	0400	1 1	1	1		
0201102011031	71300180	0410	1	1	1		
0201102011031	71300180	0420	1	1	1		
0211102111010	00301650	0431	1 1	1		1	
0221102211020	00300130	0440	1	1	1	1	
02211022110203	0030	0450	1	1	1	1	
0231102311011	80300620	0461	1 1	1		1	
0241102412021	41100300	0470	1 1	1	1		
0241102412021	41100300	0480	1 1	1	1		
0251102512041	60301470	0491	1 1	1	1		
0251102512041	60301470	0501	1	1	1		
0251102512041	60301470	0511	1	1	1		
0251102512041	60301470	0521	1	1		1	
0261102612021	41200900	0530	1 1	1	1		
0261102612021	41200900	0540	1	1	1		

0271102712011	01301460	0550	1	1	1	1
0281102812011	8030	0561	1	1	1	1
0291102912070	80302000	0570	1	1	1	1
0291102912070	80302000	0580	1	1	1	1
0291102912070	80302000	0590	1	1	1	1
0291102912070	80302000	0600	1	1	1	1
0291102912070	80302000	0611	1	1	1	1
0291102912070	80302000	0621	1	1	1	1
0291102912070	80302000	0631	1	1	1	1
0301103012021	00102700	0641	1	1	1	1
0301103012021	00102700	0651	1	1	1	1
0311103112021	80101510	0661	1	1	1	1
0311103112021	80101510	0671	1	1	1	1
0321103212051	80300580	0681	1	1	1	1
0321103212051	80300580	0691	1	1	1	1
0321103212051	80300580	0701	1	1	1	1
0321103212051	80300580	0710	1	1	1	1
0321103212051	80300580	0720	1	1	1	1
0331103312051	81201180	0730	1	1	1	1
0331103312051	81201180	0740	1	1	1	1
0331103312051	81201180	0750	1	1	1	1
0331103312051	81201180	0761	1	1	1	1
0331103312051	81201180	0771	1	1	1	1
0341103412021	9030	0781	1	1	1	1
0341103412021	9030	0791	1	1	1	1
0351103513041	80301460	0800	1	1	1	1
0351103513041	80301460	0810	1	1	1	1
0351103513041	80301460	0820	1	1	1	1
0351103513041	80301460	0831	1	1	1	1
0361103613021	60301150	0841	1	1	1	1
0361103613021	60301150	0851	1	1	1	1
0371103713041	70201750	0860	1	1	1	1
0371103713041	70201750	0871	1	1	1	1
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0371103713041	70201750	0891	1	1	1	1
0381103813011	60301200	0901	1	1	1	1
0391103913011	030	0910	1	1	1	1
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0401104013021	70310620	0930	1	1	1	1
0411104113041	80200880	0941	1	1	1	1
0411104113041	80200880	0951	1	1	1	1
0411104113041	80200880	0961	1	1	1	1
0411104113041	80200880	0971	1	1	1	1
0421104213021	8030	0980	1	1	1	1
0421104213021	80300000	0991	1	1	1	1
0431104313021	91301010	1001	1	1	1	1
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0441104413031	91301090	1021	1	1	1	1
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0441104413031	91301090	1041	1	1	1	1
0451104513021	90301200	1050	1	1	1	1
0451104513021	90301200	1060	1	1	1	1
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0461104613081	8030	1091	1	1	1	1
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0461104613081	8030	1140	1	1	1	1
0471104713021	60300700	1150	1	1	1	1

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0481104813040	31301450	1170	1	1	1	1	1	1
0481104813040	31301450	1180	1		1	1	1	1
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0491104913071	80301350	1240	1		1	1		1
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0511105114081	70301090	1270	1	1	1	1	1	
0511105114081	70301090	1280	1		1	1	1	
0511105114081	70301090	1290	1		1	1	1	
0511105114081	70301090	1300	1		1	1	1	
0511105114081	70301090	1310	1		1	1	1	
0511105114081	70301090	1320	1		1	1	1	
0511105114081	70301090	1331	1		1	1	1	
0511105114081	70301090	1341	1		1	1	1	
0521105214011	00300205	1350	1	1	1			1
0531105314010	8030	1360	1	1	1			1
0541105414021	90300170	1370	1	1	1	1	1	1
0541105414021	90300170	1381	1		1	1	1	1
0551105514041	80202220	1390	1	1	1	1	1	
0551105514041	80202220	1400	1		1	1		
0551105514041	80202220	1410	1		1	1		
0551105514041	80202220	1420	1		1	1		
0561105614021	9030	1431	1	1	1	1	1	
0561105614021	9030	1441	1		1	1	1	
0571105714021	91300840	1451	1	1	1	1	1	
0571105714021	91300840	1461	1		1	1	1	
0581105814011	60100800	1471	1	1	1	1		
0591105914011	4020	1480	1	1	1	1		
0601106014020	90300100	1491	1	1	1	1	1	
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0611106114021	0020	1511	1	1	1			11
0611106114021	0020	1521	1		1			11
0621106214031	90301420	1531	1	1	1	1	1	
0621106214031	90301420	1541	1		1	1	1	
0621106214031	90301420	1551	1		1	1	1	
0631106314011	5030	1561	1	1	1	1	1	
0641106414011	0300890	1571	1	1	1	1		
0651106514021	90301070	1581	1	1	1	1		
0651106514021	90301070	1591	1		1	1		
0661106614030	9130	1601	1	1	1	1	1	
0661106614030	9130	1611	1		1	1	1	
0661106614030	9130	1621	1		1	1	1	
0671106715011	8030	1631	1	1	1	1		
0681106815031	8030	1641	1	1	1	1		
0681106815031	8030	1651	1		1	1		
0681106815031	8030	1660	1		1	1		
0691106915051	60300190	1670	1	1	1	1		1
0691106915051	60300190	1680	1		1	1		1
0691106915051	60300190	1690	1		1	1		1
0691106915051	60300190	1701	1		1	1		
0691106915051	60300190	1710	1		1	1		
0701107015031	80301420	1721	1	1	1	1		
0701107015031	80301420	1731	1		1	1		
0701107015031	80301420	1741	1		1	1		
0711107115021	60300800	1750	1	1	1	1		
0711107115021	60300800	1761	1		1	1		

0721107215011	90300800	1770	1	1	1	1
0731107315061	80300510	1781	1	1	1	1
0731107315061	80300510	1791	1	1	1	1
0731107315061	80300510	1801	1	1	1	1
0731107315061	80300510	1811	1	1	1	1
0731107315061	80300510	1821	1	1	1	1
0731107315061	80300510	1831	1	1	1	1
0741107415031	80301205	1841	1	1	1	1
0741107415031	80301205	1850	1	1	1	1
0741107415031	80301205	1861	1	1	1	1
0751107515021	4030	1870	1	1	1	1
0751107515021	4030	1880	1	1	1	1
0761107615011	00300310	1891	1	1	1	1
0771107715011	10301630	1900	1	1	1	1
0781107815050	60200880	1910	1	1	1	1
0781107815050	60200880	1920	1	1	1	1
0781107815050	60200880	1930	1	1	1	1
0781107815050	60200880	1940	1	1	1	1
0781107815050	60200880	1950	1	1	1	1
0791107915031	90301450	1960	1	1	1	1
0791107915031	90301450	1970	1	1	1	1
0791107915031	90301450	1980	1	1	1	1
0801108015031	80301680	1991	1	1	1	1
0801108015031	80301680	2001	1	1	1	1
0801108015031	80301680	2011	1	1	1	1
0811108115041	6020	2021	1	1	1	1
0811108115041	6020	2030	1	1	1	1
0811108115041	6020	2040	1	1	1	1
0811108115041	6020	2050	1	1	1	1
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2273102113011	81302290	5740	1	1	1	1
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2944105716011	90301210	7260	1 1	1			
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3134201413021	21300410	7711	1	1	1	1
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3144201513021	81300400	7740	1	1	1	1
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3164201713021	71301920	7781	1	1	1	1
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3184201914031	71301410	7811	1	1	1	1
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3284202916011	10200540	8051	1	1	1	1	
3294203016031	91210690	8060	1	1	1	1	
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3294203016031	91210690	8081	1	1	1	1	1
3304203116021	90301700	8091	1	1	1	11	1
3304203116021	90301740	8101	1	1	1	11	1
3314203216011	80301600	8111	1	1	1	1	1
3324203316011	0301450	8121	1	1	1	1	1
3334203416021	90301000	8130	1	1	1	1	1
3334203416021	90301000	8140	1	1	1	1	1
3344203517021	50301400	8150	11	1	1	1	1
3344203517021	50301400	8161	1	1	1	1	1

Household Data

Card no.	Col. no.	Variable	Range
1	1 - 3	interview number	
	4	card no. 1	
	7	neighborhood: McNabb(1), Anglesea(2), Agincourt(3), Hawthorne(4)	
	8	1 if completed questionnaire in French	
	9	how spent vacation last year:	0 no vacation 1 touring 2 cottage 3 visit relatives 4 camping 5 relax, home 6 water-based activity 7 land-based (e.g., ski) 8 indoor activities 9 resort
	10-11	where spent vacation last year:	0 Canada in general, NWT 1 Ottawa 2 urban Ontario 3 urban Québec 4 rural Ottawa-Hull region 5 Georgian Bay area 6 other rural Ontario 7 rural Québec 8 Maritimes 9 Western Canada 10 World in general 11 New York, New England, other U.S. 12 east coast U.S. 13 interior U.S. 14 west coast U.S., Hawaii 15 Caribbean 16 U.K. 17 Ireland 18 France 19 Europe, other
	12	how spent vacation this year	
	13-14	where spent vacation this year	
	15-16	number of days on vacation this year	
	17	mid-date of vacation:	0 May-June 1 July 1-15 2 July 16-31 3 August 1-15 4 August 16-31

Household Data (cont'd)

Card no.	Col. no.	Variable	Range
1	17	mid-date of vacation (cont'd)	5 Sept.1-15 6 Sept.16-30 7 Oct.-Nov.
	18	1 if an off-season vacation (Dec.-April)	
19-20		how spend ideal vacation; additional categories:	what we now do 10 change routine 11 exit civiliz. 12 family togeth. 13 exit winter 14 need money 15
21-22		where spend ideal vacation	
23-28		winter weekend activities- 1,2,3,6,8,9 on questionnaire	
29-34		favorite winter weekend activities from above list	
35-46		spring weekend activities- 1,2,3,4,5,6,7,9,10,11,12,14	
47-58		favorite spring weekend activities from above list	
59-74		summer weekend activities- 1,2,3,4,6,7,8,9,10,11,12,14,17,20,21,22	

2	1-3 4	interview number card number 2	
	7-22	favorite summer weekend activities from above list	
23-30		autumn weekend activities- 1,2,3,6,7,8,9,10	
31-38		favorite autumn weekend activities from above list	
	39	1 if attended summer camp last year	
40-41		number of days at summer camp this year	
	42	mid'date of summer camp (vacation date code)	
43-52		daytime leisure activities- 1,2,4,7,9,10,11,12,13,14 on questionnaire	
53-67		equipment variables- 1,2,3,5,6,8,9,11,12,17,18, 19,20,21,23 on questionnaire	
68-78		parks visited by children in household- park nos. 1,2,3,7,8,9,10,11,12,13,14 on questionnaire	

Household Data (cont'd)

Card no.	Col. no.	Variable	Range
3	1-3 4	interview number card no. 3	
	7-12	children accompanied to the park by . . . (questionnaire lists 6 possibilities)	
	13-16	seasons of most frequent visits:	winter 13 spring 14 summer 15 autumn 16
	17	FREQUENCY OF CHILDREN'S PARK VISITS	
	18-21	mode of transportation used	baby carriage 18 on foot 19 bicycle 20 other 21
	22-30	answers to question II-B (opinion of parks in the neighborhood)	
	31-34	comments following question II-B	
	35-43	parks visited by teen-agers in household- park nos. 1,5,6,7,9,11,13,14,16	
	44-49	reasons for visiting the park: add 5- unorganized sports 6- skating, hockey to questionnaire choices	
	50-53	seasons of most frequent visits	
	54	FREQUENCY OF TEEN PARK VISITS	
	55-58	mode of transportation used	on foot 55 bicycle 56 bus 57 car 58
	59-62	regional parks- 1,2,5,7	
	63-66	seasons of visits to regional parks	
	67	frequency of visits to regional parks	
	68-71	visits to provincial parks	
	72-73	number in household	
	74-80	age groups, number in each group, eldest to youngest	

Household Data (cont'd)

Card no.	Col. no.	Variable	Range
4	1-3	interview number	
	4	card no. 4	
	7-9	schools attended	public 7 separate 8 university 9
	10-15	languages spoken in home	English 10 French 11 English and French 12 Italian 13 other European 14 non-European 15
	16-30	institutional alternatives:	just parks 0 parish 1 YMCA 2 golf course 3 tennis club 4 fishing 5 etc.
	31-34	alternative play spaces: street, sidewalk, etc. (questionnaire Part III-C)	
	35-38	spectator sports attendance:	hockey 35 basketball 36 football 37 baseball 38
	39-45	television viewing hours	
	46-52	answers to question III-F (quality of outdoor recreation opportunities in the neighborhood)	
	53-58	answers to open-ended question III-G:	
		lack swimming pool	53
		" tennis courts	54
		" community centre	55
		" leisure park	56
		" do-it-yourself park opportunities	57
		don't know what's lacking	58
	59	household income	
	60-63	distance of household from selected park	

HOUSEHOLD SURVEY DATA

	1	2	3	4	5	6	7	8
111	110	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0
113	1	0	0	0	0	0	0	0
114	1	0	0	0	0	0	0	0
121	1	0	0	0	0	0	0	0
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1101	1	0	0	0	0	0	0	0
1102	1	0	0	0	0	0	0	0
1103	1	0	0	0	0	0	0	0
1104	1	0	0	0	0	0	0	0
1111	1	0	0	0	0	0	0	0
1112	1	0	0	0	0	0	0	0
1113	1	0	0	0	0	0	0	0
1114	1	0	0	0	0	0	0	0
1121	1	0	0	0	0	0	0	0
1122	1	0	0	0	0	0	0	0
1123	1	0	0	0	0	0	0	0
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1131	1	0	0	0	0	0	0	0
1132	1	0	0	0	0	0	0	0
1133	1	0	0	0	0	0	0	0
1134	1	0	0	0	0	0	0	0
1141	1	0	0	0	0	0	0	0
1142	1	0	0	0	0	0	0	0

[illegible]

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0311 21512-----011-----000001000000000000011010000000000000000100000010000
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0321 21208204152001-----000010000000010000100010000000000000000101001010000
0322 00000000000000000100100100000000-----010000000010000100010000-----
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0331 25409119324012-----001001001000001110011100001100001001110100110010000
0332 00001001000000001001110010001000-----0101010000100001110100000000000000
0333 -----22121-02-0000-----1110010130010020020000
0334 000001000000100000000000-----00000000011011122200000051900
0341 220--0--00-00110-----
0342 -----312200110000-----111000101100020110000
0343 -----0000-----9999999-----13200
0344 000000100-----0000-----
0351 21704704-----70-----14110000110000101011101110010001011111100111101101
0352 11110001101010001110000111000010-----010101000010101111111110-----
0353 -----3322122210000-----11111011401100711-21-----
0354 001001002100010100000010000000011111113222111-----31320
0361 251120--00-001-----0000010000001000000100000000000000000001001001000010000
0362 000000000000000000101000100000000-----00000010001000000000000000-----
0363 -----2-----0000-----000100101-----040211000
0364 000001000-----000000001119-----31240
0371 220--0--00-002-----010000000000-----0000000011000000000110000010000000
0372 -----21222122300000000000000-----010001104-----040021001
0373 -----101100001100100-22-0-----12350
0374 010010000-----101100001100100-22-0-----12350
0381 210--0--00-004-----101010101000111001100000010001000001000101010000
0382 000000010010000010011000000100000-----0110101100101100011111100000000000
0383 -----21222122300000000000000-----010001104-----040021001
0384 0001000000000000000000110101000001011112333300100011230
0391 210--108131001-----1101000100000110000010000010000000001000010001000010
0392 00000000010000100010100100001000-----1001001000000000010110000-----
0393 -----3322203330001-----0010000011032999900000040760
0394 000001000-----00110000011032999900000040760
0401 212--2--151010-----1100001000000011000000110010000000001001000100001110
0402 1001000000000001010001001100000010-----0001010000110001011110110010000000
0403 10000110002010012--2--0-100000000000-----0000-----072111110
0404 0100010000000000001000010001000000001009999999-----50940
0411 210--4061620011010011010001000110100111000110001110111100101000000
0412 111100010000000010100001000000000000000000000000000000000000000000000000
0413 011100111121100-222--2--0101000000000010000111131100111101103-----040110103
0414 10010000000000001000000011010-----10000109999999-----20600
0421 210--0-----001-----0000010000010000001101000000000000110100000000000
0422 00000000000000010101000001000000-----01011011000000000000010000-----
0423 -----22222222-----10110111100001010000
0424 000-----00000000000001-----00000000100000000-----20600
0431 220--0--0-----0-----000001000-----
0432 -----00000000-----0010-----031200000
0433 -----00000000-----00001001110120111000100000450
0434 000010000-----000000000000100100000000000000000000000000000000000000
0441 257047040810006-----00000100000000010010000000000000000000000000000000000
0442 00000000000000010101000000000000-----0100011000-----0000-----011000000
0443 -----0000-----0000-----9-----00640
0444 0000100000000000000001000-----00001000000-----

```


[illegible]

[illegible]

[illegible]

[illegible]

1363 0100000010201103221120110000-----1111011040010040020011
1364&&10010000000000000000000010110000100000102211111010003
1371&&-1204116220011-----00000000000010000000101100000000110101100000011010&&&&&&
1372&&00010000000010000001000100000001-----000000100010000000010000-----&&
1373 -----232302020-----0110010010010010100000
1374&&000100000-----000000101100100023-----4
1381&&-11190-----0011000000100000010100001000000000001000000001000010000&&&&&&
1382&&00000000000000000010100000000000-----010100100000000001010000-----&&
1383 -----22202222-----1110000120001020200000
1384&&000001000001000000000000-----10100000011111111-----
1391&&-1611-02-----011000000100000000000001101000000000000010000000010000&&&&&&
1392&&00000000000000000-----0100001000-----&&
1393 -----1100-----0010011000000
1394&&00010000010000000000000000-----00000000110-----1
1401&&-1---711182011-----1010010010001001000110001000000001100101000010000&&&&&&
1402&&00000010000000000001000000000000-----0100111000110001000110001-----&&
1403 -----120120112-----111001013-----020020000
1404&&0001000000010000100000000-----000000000102222222-----5
1411&&-1408-1018000817-----0000000100000000000100000110000000010001&&&&&&
1412&&000000000000100000001010000010000-----000010100010000110010000-----&&
1413 -----1000-----0110001020001020020000
1414&&000100000000000000000001-----000000000000999999-----4
1421&&-1404404142004-----00010000000010000001101010000001000110100110010001&&&&&&
1422&&1001001000000000000100000000000000-----010110100010000010100010-----&&
1423 -----222011220-----111001113-----040202000
1424&&0001010000001000000000001-----1111110221000100000004
1431&&-16150-----00110000001000000000100010011000100000000100011000011000&&&&&&
1432&&00010000000000000000000000000001-----100001100011000111110000-----&&
1433 -----32211-1-----1000000000000-----111101012-----050201200
1434&&00010000000000000000000000000000000001111333300000004
1441&&-1109509314011-----001000000000010100011010010000000001101110100000001&&&&&&
1442&&000000000000000000011101000000000-----0000011000110010000000001-----&&
1443 -----232321030-----0110111141001020020000
1444&&00010000000000000010000000-----00000000111-1233441000003

Park Equipment Data

The variable list for park equipment data is in Table 3, page 38 of the main study.

PARK EQUIPMENT DATA

	1	2	3	4	5	6	7	8
1	16	1	1	0	1	0	0	1
2	14	1	1	0	0	2	0	0
3	14	1	1	0	1	0	0	1
4	14	1	1	0	2	0	0	0
5	12	1	1	0	0	0	0	0
6	04	0	1	0	2	0	3	0
7	00	0	0	0	1	0	0	1
8	09	1	0	0	0	0	0	1
9	14	1	1	0	0	0	0	1
0	18	1	0	0	1	0	0	1
1	00	0	0	0	1	0	0	0
2	13	1	0	0	1	0	0	1
3	14	1	1	0	0	0	0	0
4	11	0	1	2	2	2	0	0
5	09	1	0	1	8	2	1	0
6	00	0	0	0	1	0	0	2
7	08	0	1	0	0	0	1	0
8	00	0	0	0	0	0	1	0
9	16	1	1	0	1	0	0	4
20	00	0	0	0	4	0	1	0
21	00	0	0	1	0	0	0	1
22	14	1	0	0	1	0	0	2
23	00	0	0	0	0	1	0	0
24	14	1	0	1	0	1	0	0
25	00	0	0	0	0	0	1	0
26	00	0	0	0	2	0	0	1
27	11	1	1	0	1	0	0	1
28	04	0	0	1	0	0	0	1
29	00	0	0	0	1	0	0	0
30	14	1	1	0	2	2	0	1
31	00	0	1	0	1	0	0	1
32	16	1	1	0	1	2	0	1
33	14	0	0	0	1	0	0	1
34	00	0	0	0	0	0	0	1
35	00	0	0	0	2	0	0	0
36	14	0	1	0	0	0	1	0
37	14	1	0	0	1	2	0	1
38	14	0	0	0	2	2	0	1
39	00	0	0	0	1	0	0	0
40	00	0	0	0	0	0	1	0
41	14	1	0	0	0	1	0	0
42	14	1	1	0	2	2	0	1
43	00	1	1	0	0	0	0	0
44	14	1	1	0	3	2	0	1
45	12	0	1	0	2	0	0	4
46	04	1	1	2	0	0	0	0
47	00	0	0	0	0	1	0	0
48	17	1	1	0	1	0	0	7
49	00	0	0	0	1	0	0	0
50	28	1	1	0	1	2	0	1
51	16	0	1	0	0	1	0	1
52	14	0	1	0	0	0	0	0
53	00	0	0	0	0	0	1	0
54	24	1	1	1	2	0	0	6

55	28	1	1	0	1	0	0	1	0	0	1	00	0	0	0	0	1	22
56	14	1	1	0	1	0	0	1	0	0	1	00	0	0	0	0	17	
57	12	0	1	1	1	0	0	1	2	1	0	00	0	0	2	0	11	
58	14	0	1	3	2	2	2	2	0	0	1	04	0	0	0	0	18	
59	18	0	0	1	1	1	0	1	0	0	1	16	0	0	0	0	20	
60	00	0	0	0	1	0	0	0	0	0	0	00	0	0	0	0	41	
61	00	0	1	0	0	1	0	0	0	0	0	00	0	0	0	0	14	
62	14	1	1	1	2	0	0	2	0	0	1	00	0	0	0	0	21	
63	00	0	0	0	1	0	0	1	0	0	0	00	0	0	0	0	27	
64	28	1	1	0	0	2	0	0	2	0	0	00	0	0	0	0	31	
65	00	0	0	0	0	0	0	1	0	0	1	00	0	0	0	0	27	
66	14	1	0	0	1	1	0	0	0	1	0	00	0	0	0	0	20	
67	00	1	1	0	0	0	0	0	1	0	0	07	0	0	0	0	05	

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Abstract

Why are there so often no parks where the people are, and no people where the parks are? Jane Jacobs' question is taken up in a micro-geographic study of four local neighborhoods of metropolitan Ottawa-Hull. Other research contemporary with this study has shed some light on questions of the demand for urban playgrounds and the range of after-work and after-school activities. Two questions which have received less attention are the timing and intensity of local park use, and the broad policy issue of the portion of demand for parks, playgrounds and similar areas which should be met in municipal park systems. The present study draws some new conclusions with respect to each of these questions, through examining similarities and differences in frequencies of park use among each of the four local neighborhoods.

To control the sample conditions, parks were selected in each neighborhood which had the same kinds of recreational equipment provided. Thus, differences in use of the parks resulted from neighborhood differences rather than from the qualities of the parks themselves. In the process of analyzing the recreational equipment of parks, it became apparent that the municipal park system of Ottawa, the largest system in the metropolitan area, could not be said to be composed of distinctive park types arranged in a hierarchy.

Two surveys were conducted: a survey of park users, and a survey of households in the zones of influence surrounding each selected park. The park user survey showed that visits

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to the park declined with distance away from the park in three of the cases, but not in the fourth case. The household survey showed that visit rates to all local parks were unaffected by the distance of the household from the selected park.

Among the variables which did significantly affect the park visit rates of households were the number of children in the household and certain key aspects of their leisure habits: whether they owned a baseball and bat, whether they participated in neighborhood games such as hide-and-go-seek, whether they watched television from 4:00 to 6:00 in the afternoon, and whether they went camping on summer weekends. Conventional socio-economic variables did not appear to influence park visit rates, except among teen-agers, who were more likely to visit parks if they attended public rather than separate schools. Nevertheless, separate analyses of each of the four neighborhood samples showed significant differences in park visiting behavior from one neighborhood to another, differences that could not be accounted for by individual household characteristics, and therefore seemed related rather to broader cultural patterns and land-use characteristics of each neighborhood. Statistical models to explain park visit frequencies, based on the household survey results, explained 60 percent of the variance found in the park visit rates for the entire sample, while substantially higher explanation was achieved in each neighborhood considered individually. In no case was income significantly related to local park visits.

Approximately one-half of respondent households made no use of local parks at all. Only between two and four percent

of the population of a neighborhood was found to be present in a given park on the heaviest use day encountered during the park user survey. A very small number of park users constituted the "hard core" clientele of each park. The "hard core users" were responsible for most of the visits and nearly all of the visitor-hours of park use. The use of parks reached its highest peak in the early afternoon, with secondary peaks noted in evening hours. These were accounted for by the popularity of swimming and sports, respectively, as summer park activities.

Considering the distances park users were willing to travel for playground and sports activities, some neighborhoods of Ottawa were clearly over-supplied with parks offering these facilities. Significant potential demands were shown to exist that were not provided for in the existing system, including: opportunities for stay-at-home vacations; trail uses of various kinds; dog walking; "general leisure" activities such as deep-water swimming, sunbathing, barbecues, and strolling; walking to and from work; and, in general, opportunities for a more diverse mixture of people to congregate together in the same parks. Considering the prospect for substantial improvements in municipal park services, further research is needed to extend the results of the present study to consider exemplary "unsuccessful" parks, and to view the problem of the use and non-use of urban parks in the perspective of entire park systems.



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