

A POLICY PROPOSAL
FOR DEVELOPMENT OF THE
MORDEN - WINKLER AREA

A Thesis

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of the Requirements for the Degree
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by

Edward Sawatzky

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INTRODUCTION

The settlements of Winkler and Morden (both about 3,200 population) are unique in that they are located only seven miles from each other. Both centres are, however, prospering economically. As service centres, these towns depend, to a large degree, on the agricultural hinterland they serve. The situation raises questions as to why this is occurring and what possible implications it may have for future development. The answers to the posed questions may be found in the structure or character of the towns, their relationship to the hinterland and their relationship to each other.

It is the hypothesis of this thesis that the communities of Morden and Winkler are so interrelated as to form a system. The proximity of the two towns suggests that a strong communication link exists between them and that both communities may be serving identical hinterlands. Although each possess the basic elements characteristic of self-sufficient communities, it may be that each centre specializes in some activities which are desired by the other centre as well as its hinterland. It is this functional difference which ties the two communities and their hinterlands to form one interdependent system.

Based upon the premise that the two towns are mutually interdependent and serve a similar hinterland, it seems only natural that any future development in one community cannot be carried out without considering the effect on the other. In order to optimize the future development of each community, they must be considered simultaneously. The future growth of the two communities must be predicted. From population projections it is possible to estimate the future space requirements of land use activities. It will then be necessary to allocate the appropriate activities to each community based upon their specialized functions.

The significance of a planning proposal based on an area including more than one community lies in the fact that the communities within the system will be better off performing those functions which each can do best, rather than competing for the attainment of all activities. Herein may lie the solution to many a community in rural Manitoba.

PART I - THE ANALYSIS

CHAPTER 1

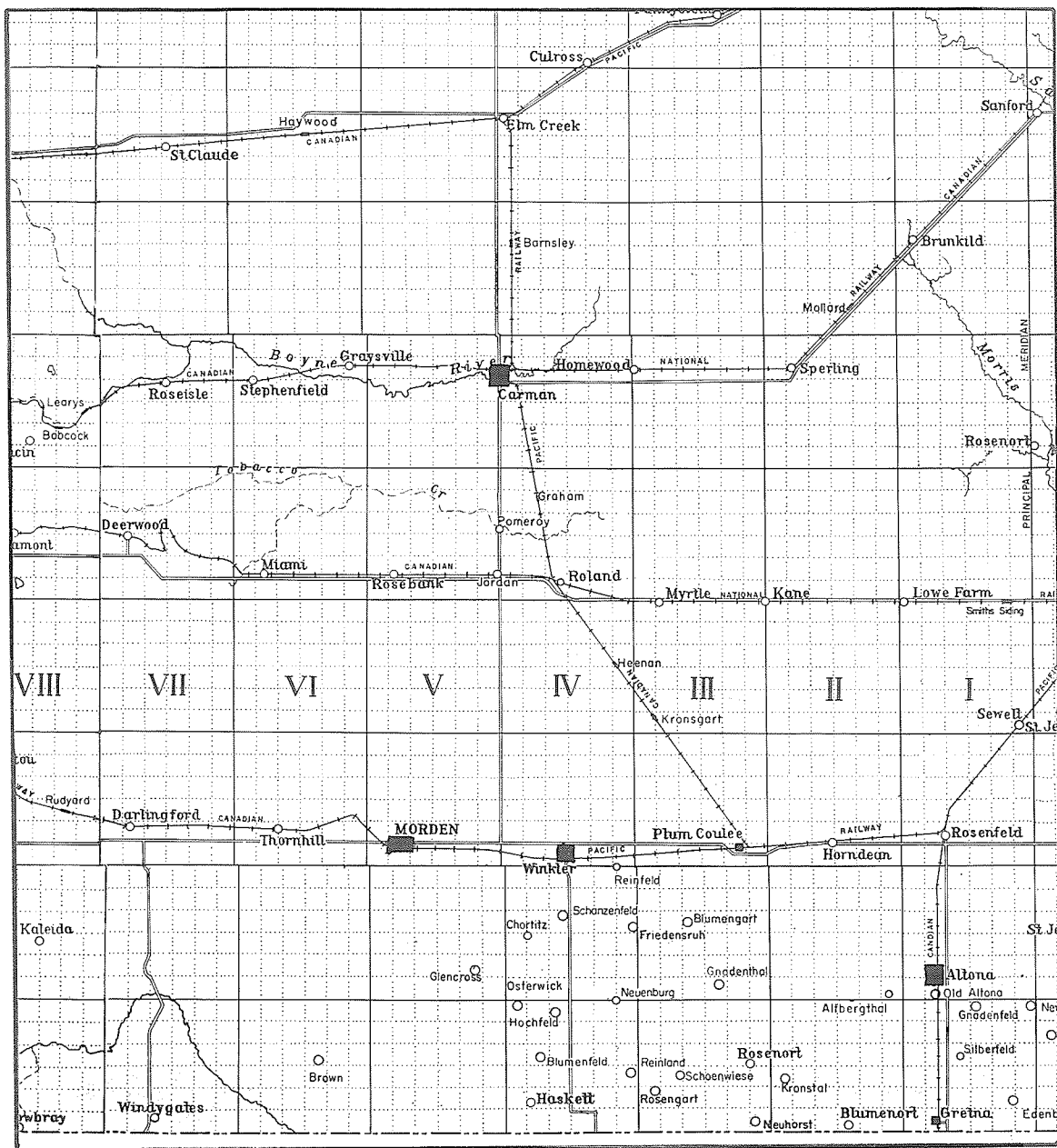
SALIENT ASPECTS OF MORDEN AND WINKLER

The communities of Morden and Winkler are located about 80 miles southwest of the city of Winnipeg near the Canada-United States Boundary. (Map 1). Both towns are characteristic of service centres.¹ Important historical events have influenced and shaped the communities to become what they are today. The historical development of Morden and Winkler will be dealt with in a combined manner in order to stress the dependent nature of their existence. The chapter will conclude with an account of resultant population structure and character in each community as it exists today.

Historical Sketch

In order to more fully understand the interactions of the present

¹As a country advances, a greater proportion of its population becomes engaged in performing services instead of manufacturing or production. Since many of the services are centralized, their personnel are concentrated in towns which develop as service centres. Towns find their territorial basis as service centres by serving the rural population as well as the community. Arthur E. Smailes, The Geography of Towns, Hutchinson University Library, London, 1965, p. 28, 35, 36. Murphy defines a Service Centre (Diversified Retail Centre) as having greater employment in retailing than manufacturing, but manufacturing is at least 20 per cent of aggregate employment. R. E. Murphy, The American City, McGraw Hill, New York, 1966, p. 118. The 1961 Dominion Bureau of Statistics employment figures for Winkler and Morden fit this definition.



MORDEN - WINKLER AREA



scale: 8 miles to
one inch

Source: Department of Mines and Natural Resources, Surveys Branch.

economic and social structures of the towns of Morden and Winkler, a brief account of the past processes which have brought about these conditions should be given.

The present townsite of Morden was laid out in 1883. It was surveyed into the regular gridiron pattern with the plan taking shape along the north side of the railway right of way. This new Canadian Pacific branch line had bypassed the nearby towns of Nelson and Mountain City. As a result, business establishments from these two towns were moved to Morden. Morden grew rapidly throughout 1884 and 1885.

Most of the Morden merchants were Anglo-Saxons serving the farmers of the Pembina Mountain country as well as the newly established Mennonites to the southeast. By 1888, Morden had become the largest agricultural supply and grain marketing centre, aside from Winnipeg. The town, although attempting the establishment of small industries, remained dependent upon the agricultural area which it served. During this time, other centres such as Plum Coulee and Gretna also developed as a result of the agricultural settlement of South Central Manitoba.

The first indication that a trading centre was to be built between Plum Coulee and Morden occurred in 1892. Although the

Morden businessmen were opposed to the construction of the railway siding, the new town site of Winkler was established seven miles east of Morden. There were good reasons for founding Winkler at this location. In 1892, over 700,000 bushels of wheat had been shipped from Morden, much of it supplied by the Mennonites.²

The Mennonites often considered themselves poorly treated by Morden businessmen. Plum Coulee, located farther east, was somewhat removed from the main agricultural settlement to serve as an alternate grain depot for farmers. The prospect of a new service centre attracted Mennonites to Winkler. Economic factors and ethnic differences determined the establishment of Winkler.

The growth of Winkler is an excellent example of how a new service centre can effect the trade area of an established town. Morden's trading boom reached its height in 1888. The building of the North Pacific Railway (now owned by the Canadian National Railway) 12 miles to the north in 1889 curtailed Morden's trading in that direction. Shortly afterward, Winkler cut off the trade to the southeast. Business became quiet in Morden from the effects

² John H. Warkentin, "The Mennonite Settlements of Southern Manitoba" (unpublished Ph. D. dissertation, University of Toronto, 1960), p. 274.

of the reduced umland.³ Morden then turned to industry and wholesale in an attempt to ensure the continued growth of the town. A woolen mill was erected in 1893. Two pump factories were established in 1895. In 1896, the Morden Marble and Granite Works were founded. A tannery and a carriage works were also set up in Morden. These industries, however, could not meet the competition of Winnipeg which had the banking, transportation facilities and the more central location necessary to run competitive, well organized businesses.

From 1900 until the early 40's, Morden was in a slump. Its population was 1522 in 1901, but dropped sharply to 1130 by 1911. It rose steadily after that until it reached 1500 again in the 40's. Morden did manage to survive, partly because its stores were always supported by the government employees who were stationed in Morden. Much of the activity in Morden was preserved by the judicial and administrative functions of the town. These supplied Morden with responsible citizens and some social

³There is no generally accepted terminology for contiguous areas around a centre. The area in which the influence of a community is dominant has been variously called tributary area, market area, sphere of influence, hinterland, umland, urban field and service area. Here, the single-feature regions will be termed trade areas, and the area of city dominance as a whole as the city's umland. Spheres of influence will be used in the more general sense of including both the city's trading area and its umland.

prestige. Further importance was brought to Morden when a Dominion Government Experimental farm was located there in 1914.

Winkler continued to prosper after 1900, mainly because its businessmen were extremely competitive. Much of the competition was due to the sizable Jewish community which settled in Winkler. The development of new service centres provided opportunities for the Mennonites, who were until then an agriculturally oriented people, to become businessmen. As a result a well balanced rural prairie society developed.

Winkler's trade kept on expanding at the expense of Plum Coulee and to some extent, Morden. Winkler's population was small even though its business volume was great. In 1901, it had 391 people, and 458 in 1911, but by 1921 its population had shot up to 812. This sudden growth was the result of a great increase in the purchasing power of Winkler's umland accompanying the rise in grain prices during the War years. Winkler also prospered because Anglo-Saxon Morden merchants drove away much Mennonite and German trade during the war. After the 1920's, Winkler also emerged as the cultural centre for the Mennonites, with the establishment of the Bible School. During the 40's, Winkler established a

cannery. It built a large modern seed cleaning plant in 1955 and a huge potato warehouse in 1956. These enterprises kept Winkler well to the front as a centre of a diversified agricultural area. Winkler also had four large stores in competition for the retail trade. Prices were more competitive in Winkler and people even came from Morden to shop in Winkler.

Morden began to reassert itself as a service centre after World War II. In 1941, Prairie Farm Rehabilitation Area (PFRA) engineers created a small lake one and one-half miles southwest of Morden by constructing a dam across Dead Horse Creek. This dam was enlarged in 1952 to meet the needed water supply of Morden. In addition to supplying Morden with a source of domestic and industrial water, this lake also provided the town with a recreational facility. These improvements revitalized the town and not only rural industries but also new trades-people moved in, and in 1955, 31 out of 81 businesses in Morden were owned by Mennonites.⁴

Thus both Morden and Winkler established themselves as important service centres for the rural population of South Central Manitoba. For example, by 1955 Winkler had a cannery, a creamery, poultry dressing plant and a dry cleaning establishment. Morden also

⁴Warkentin, Op. Cit., p. 403.

acquired a cannery and poultry plant. Both towns were the only ones in the area each having a hospital, a newspaper and a funeral service.

Morden dominated the recreational facilities with the construction of the lake, golf course, public park, movie theatre and enclosed rink. It gained the reputation of a beautiful site and a good place to live. The major streets were paved and curbed and streets were lined with trees. In contrast, Winkler was a treeless town with poor streets due to the quicksand-like subsurface and characteristically high water table of the site.

Historical influences, to a large degree, determined the street pattern and the location of the business area within the two communities. Because both Morden and Winkler developed as a result of the introduction of rail service in southern Manitoba, they were surveyed on a gridiron pattern by Canadian Pacific Railway (CPR) engineers, and consequently, the fact that the main business street in CPR towns generally ran parallel to the rail line was not a mere accident. In 1892, when the plan for Winkler was being laid out, the co-promoter of the project attempted to have included, a town square with space for market and recreation facilities. The CPR refused to allow this on the grounds that all the business

firms in town should be on the street facing the railway.

As Morden grew, the business area along Railway Avenue became crowded. A fire which gutted a portion of the business area initiated the relocation of businesses to Stephen St., one block to the north. The main road leading through town was located another block to the north. Although the main highway did not attract business establishments until much later, it did determine the direction of growth that the town would take.

The town site of Winkler was surveyed to the south of the railway line. Poor drainage north of the tracks prevented any major development until recently. Winkler's business district was located along South Railway Ave. It also moved from the railway, but 30 years later and for different reasons. With the improvements of roads and truck service to Winnipeg, businessmen relied less on rail service. This change in the mode of transportation coupled with the general deterioration and fire hazards in the old area, encouraged businesses to move south along Main Street, perpendicular to the railway line. Winkler's direction of development occurred mainly to the south and west.

The Town of Winkler

The population of Winkler was 1,331 in 1951. Winkler's population increased by 90 per cent between 1951 and 1961 to 2,529. Much of this change was due to the annexation of the southern extension of the town. (See Map 2). Winkler's population increased by about 18 per cent from 1961 to 1971. It now has 3,124 people. Of the total change in population between 1951 and 1971, about 66 per cent was accounted for by net in-migration; the remaining 34 per cent by natural increase. The male-female ratio of the population is 46/54 per cent.⁵

The ethnic composition of the population of the town of Winkler indicates a dominance of German and Netherland people, most of whom are Mennonites. (Table 1). Of the total population in 1961, almost 90 per cent were of German and Netherland origin. The remaining proportion of the population was shared between British Isles, French and other ethnic groups. Only about 3 per cent of Winkler's population was of British origin.

⁵ Population characteristics of Winkler were obtained from the Regional Analysis Program, compiled by the Department of Industry and Commerce, Data Output Part 1A, and the Manitoba Hospital Commission Report, Population of Manitoba.

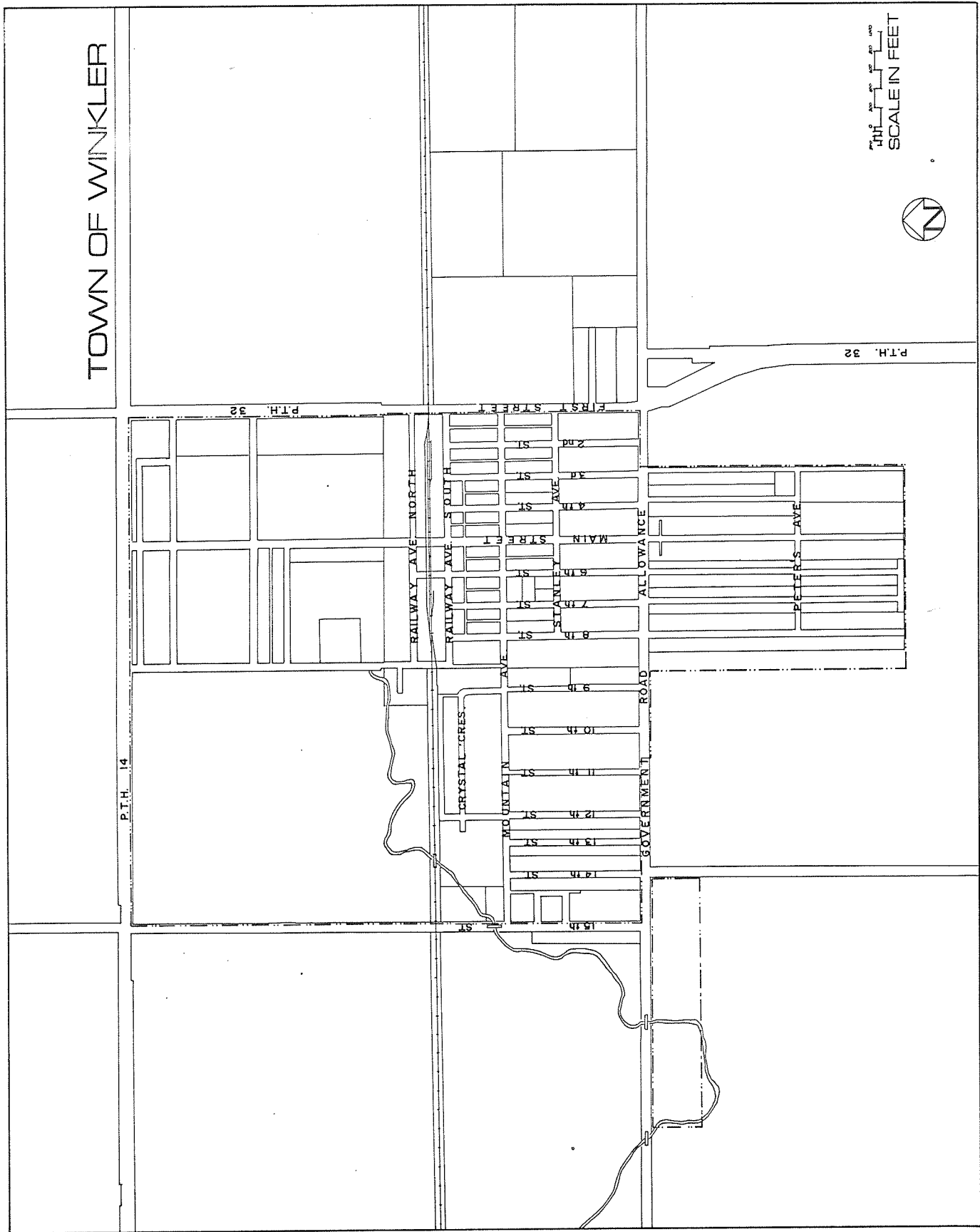
TABLE 1

ETHNIC BACKGROUND OF THE WINKLER POPULATION - 1961

Total Pop.	British Isles	Per Cent	French	Per Cent	German & Netherland	Per Cent	Other	Per Cent
2529	74	2.9	3	0.1	3266	89.6	180	7.4

Source: Regional Analysis Program, Data Output Part 1A, p. 163.

The age-sex structure of Winkler's population shows a relatively large number of children and young people with fewer people in the middle range and a substantial number of retired persons (Figure 1). In 1971, 39.8 per cent of the total population fell between the ages of 0-19, 18.9 per cent between the ages of 20-34, 23.5 per cent were in the 35-64 age group and 14.5 per cent comprised that group over 65 years of age. Table 1A indicates the changing trends which are occurring in the age structure of the



AGE - SEX PYRAMID
WINKLER - 1971

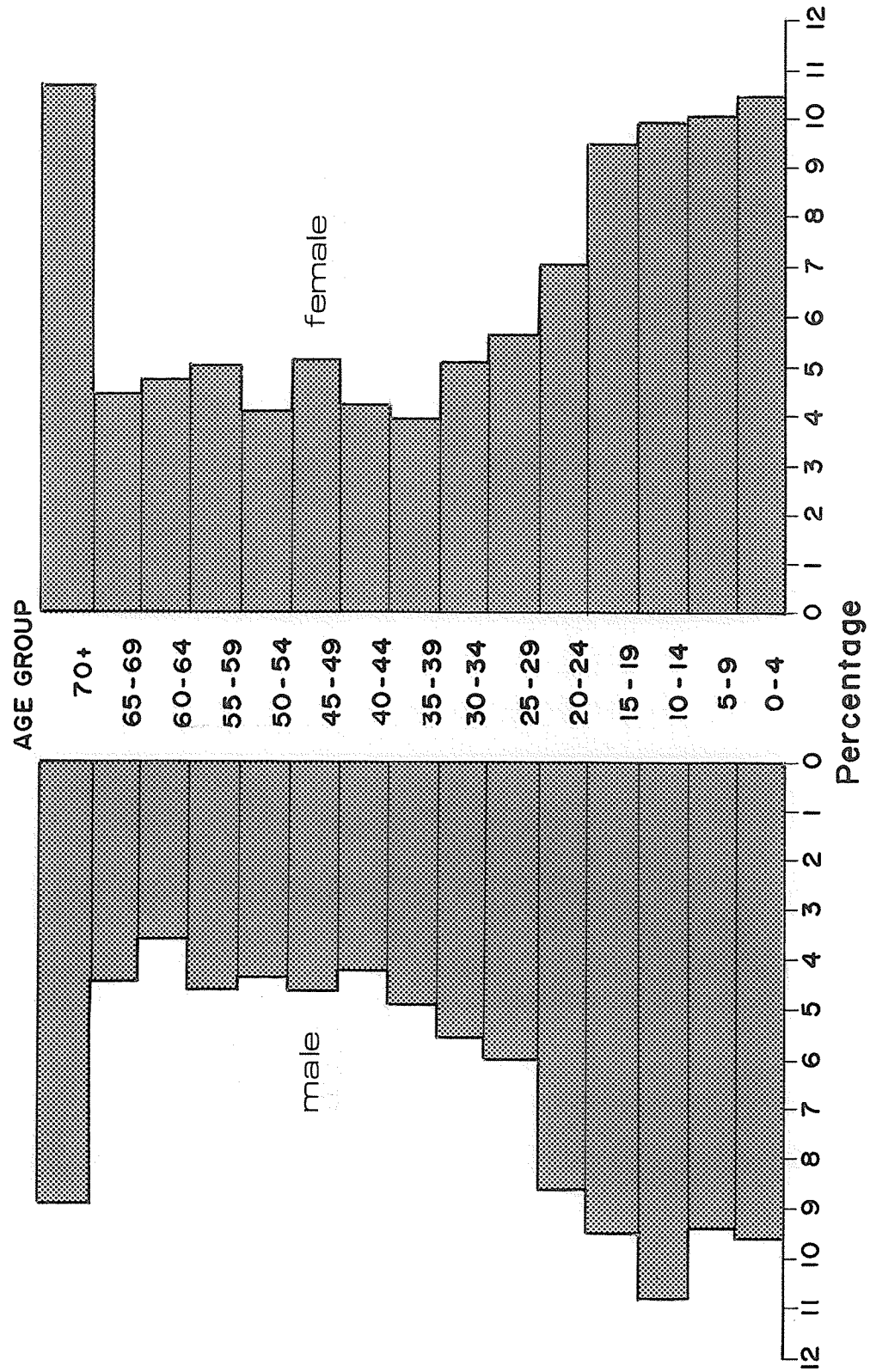


Figure 1

population. The percentage of young people between the ages of 0-19 remained fairly stable over the last 15 years. The percentage decrease of people between the ages of 20-64 is important to note. There is also a significant percentage increase of that population over 65 years of age. In all likelihood these trends will probably continue as young people tend to leave the community to seek opportunities in larger cities, and as the older people from the surrounding area move into the community in anticipation of retirement.

TABLE 1 A

POPULATION OF WINKLER BY SELECTED AGE-GROUPS 1956-1971

Year	Total	0-19	%	20-34	%	35-64	%	65-	%
1956	1634	632	38.6	327	20.0	468	28.7	207	12.7
1961	2529	1058	41.8	407	16.1	707	28.0	357	14.1
1966	2570	977	38.0	420	16.3	735	28.6	438	17.1
1971	3124	1242	39.8	591	18.9	834	26.7	454	14.6

Source: Dominion Bureau of Statistics, Census of Canada.

Most of Winkler's residential growth during the late 40's occurred between the railway and the southern town limits. Many of the people lived within several blocks of the Central Business District (CBD). Residential expansion toward the west occurred in a leap-frog fashion, leaving whole blocks unoccupied. This phenomenon was mainly attributed to lot size and absentee

ownership of the land. The lots were too large for most people to purchase and the owners were not willing to subdivide further. Absentee owners were unaware of the rapid expansion and did not sell the lots for development until taxes on the land became too high to warrant holding them economically unproductive.

Residential growth was quick to develop outside the town limits because of differences in the taxation rates between the Town of Winkler and the Rural Municipality of Stanley. Towards the south, fringe development occurred as a natural extension along Main Street from the commercial centre. In the east it developed along PTH #32. Many of these people moved here from the agricultural villages farther south. They were usually unsuccessful farmers looking for employment in Winkler.

By the late 50's residential expansion continued westward and southward. The western portion where development occurred in leaps had now been completely settled. Alternate blocks of new and old housing characterize the area.

From 1969 to 1970, 76 new homes were constructed in Winkler, much of this construction occurred along Crystal Crescent located near the railway tracks. The presence of the railway, one would think,

would discourage new residential growth. At one time plans were made to develop the vacant southwest section of the town. The land owner would not consider moving or selling his farm. Council, not wanting to expropriate, looked for an alternate site. The town was forced to consider development north of the tracks.

A recent phenomenon is the occurrence of apartment blocks. Most of the people living in them are professional persons or young couples from outside the community who use them as a temporary home until they become established.

The 1961 breakdown of the labour force by industrial classifications may serve to indicate the character of Winkler as a service centre. Of the total people employed in Winkler about 60 per cent were employed in tertiary industries, mainly service and trade. Another 30 per cent were employed in secondary industries, most in manufacturing and the remainder in agriculture. (Table 2).

TABLE 2

EMPLOYMENT BY INDUSTRIAL CLASSIFICATION - WINKLER, 1961.

Industrial Classification	Employment	Sub-total	Percent
Primary			
Agriculture	68		
Forestry	0		
Fishing/Trapping	0		
Mining	2	70	9.7
Secondary			
Manufacturing	152		
Construction	62	214	29.6
Tertiary			
Transportation	50		
Trade	169		
Finance	19		
Service	145		
Public Admin./Defence . . .	24	411	56.9
Unspecified	28	28	3.9
Total		723	100.0

Source: Regional Analysis Program, Output Part 1A, p. 350.

The Town of Morden

In 1951, Morden's population was 1,862. Its population increased to 2,793 by 1961; a 50 per cent increase. From 1961 to 1971 Morden's total population rose by about 17 per cent. It now has 3,276 people. About 60 per cent of the change in population between 1951 and 1971 was due to net in-migration of people, the remainder by the rate of natural increase. The male-female ratio of the Morden population is 49/51 per cent.⁶

The ethnic composition of the population of the Town of Morden indicates a dominance in the German, Netherland and British Isle people (Table 3). Of the total population in 1961, about 60 per cent were of German and Netherland origin. The proportion of British Isle people to the total population was about 27 per cent; the remaining population including a host of other ethnic groups.

The age-sex distribution of Morden's population is very similar to that of Winkler. There are a relatively large number of young people and older people with few persons in the middle age

⁶ Population characteristics of Morden were obtained from the Regional Analysis Program, compiled by the Department of Industry and Commerce, Data Output Part 1A, and from the Manitoba Hospital Commission Report, Population of Manitoba.

range living in the community. (Figure 2). The 1971 population statistics show that 35.1 per cent of the population was between the ages of 0-19, 17.2 per cent between 24-34, 30.0 per cent between 35-64 and 17.7 per cent over the age of 65. Table 3A shows the trends in age structure of Morden's population since 1956. The table indicates some decrease in the percentage of the population between the ages of 0-19. The percentage of the population between the 20-34 and 35-64

TABLE 3

ETHNIC BACKGROUND OF THE MORDEN POPULATION - 1961

Total Pop.	British Isles	Per Cent	French	Per Cent	German & Netherland	Per Cent	Other	Per Cent
2793	747	26.7	12	0.4	1699	60.9	334	11.9

Source: Regional Analysis Program, Data Output Part 1A, p. 161.

AGE - SEX PYRAMID MORDEN - 1971

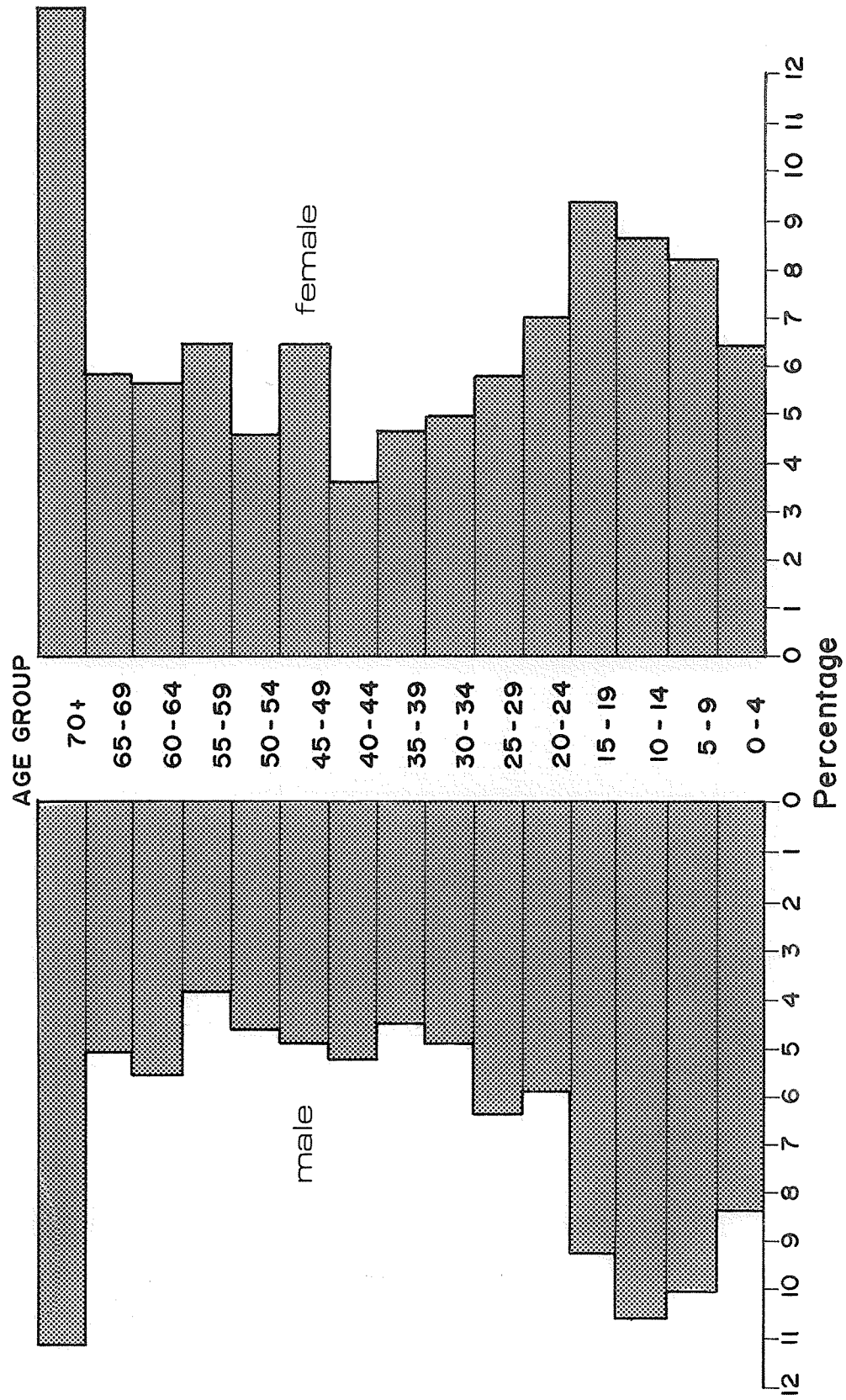


Figure 2

cohorts have remained constant, with a substantial percentage increase of the people over 65.

TABLE 3 A

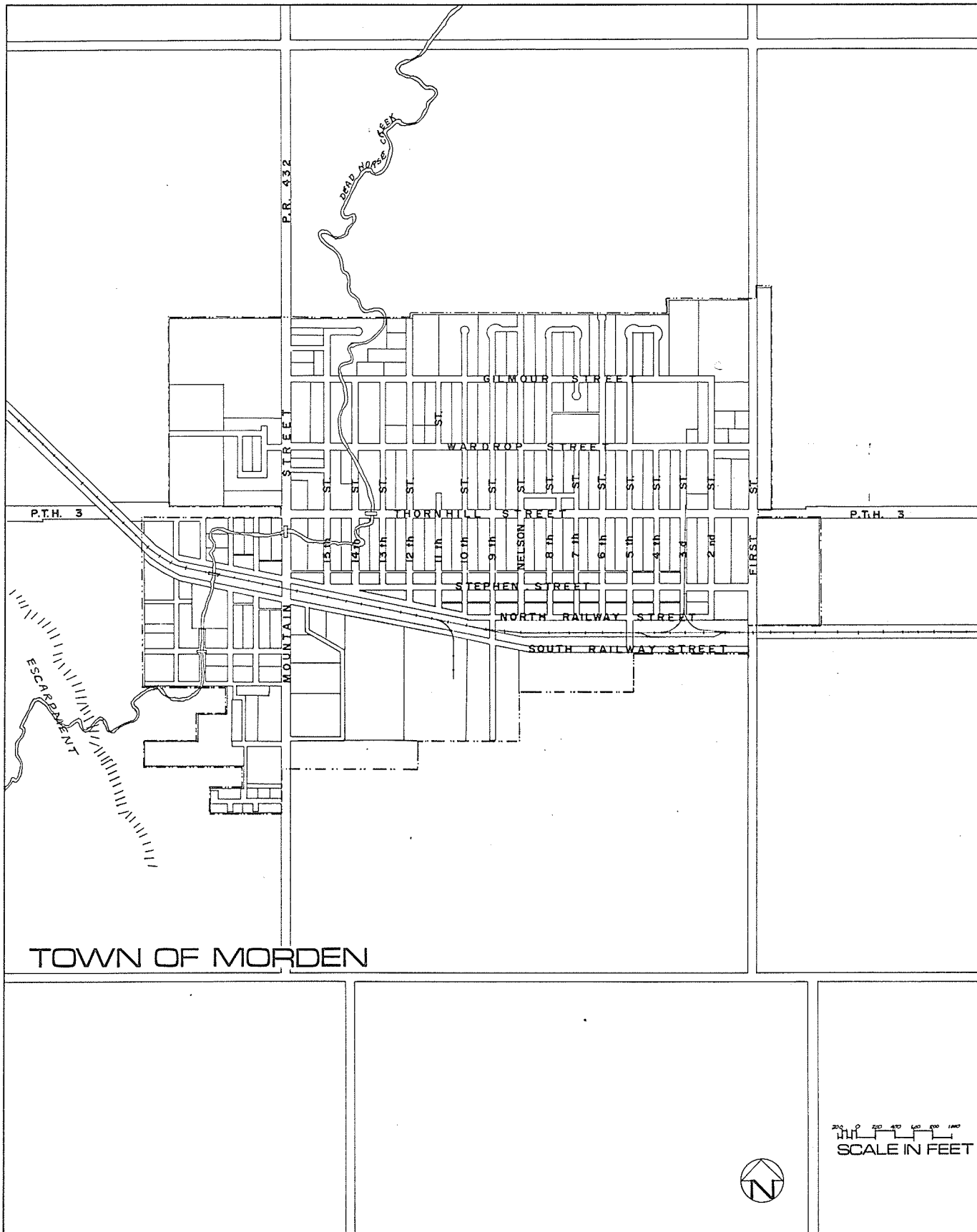
POPULATION OF MORDEN BY SELECTED AGE-GROUPS 1956-1971

Year	Total	0-19	%	20-34	%	35-64	%	65-	%
1956	2237	874	39.1	396	17.7	700	31.3	267	11.9
1961	2793	1104	39.5	464	16.6	859	30.8	366	13.1
1966	3097	1192	38.5	508	16.4	931	30.1	466	15.0
1971	3294	1156	35.1	567	17.2	985	30.0	586	17.7

Source: Department of Industry and Commerce, Community Data Sheets, "Morden", 1970.

Morden's residential growth advanced mainly northward from the commercial area near the railway tracks. (Map 3). Pre World War II development occurred primarily in that part of town between Stephen Street and Thornhill Avenue. After the war, the next tier of blocks north of Thornhill Ave. was settled up to Wardrop Avenue. Since the 60's, residential development has extended north of Wardrop and also west of Provincial Road #432. More recently, good homes have been built in the vicinity of the park and on the eastern slope of the escarpment. The natural treed setting near the park and view from the slopes have attracted high quality homes to these areas.

Some residential development occurred south of the tracks



Map 3

and west of Provincial Road #432 during the 40's. The area was settled mainly by immigrants and unsuccessful farmers. The area is characterized by poor housing, usually one storey wood frame construction. Recently, however, some parts of the area have been inundated by high quality homes, especially along Pembina Street on the higher land to the west.

Morden has also experienced a recent influx of multiple family dwellings and apartment blocks. These may be found scattered throughout the community near major traffic arteries and in the newly developed sections.

Very little of Morden's residential development has occurred outside the town limits; a striking contrast to Winkler's fringe development. Many of the vacant lots found throughout the residential areas are being filled with good housing.

The 1961 breakdown of the labour force by industrial classification may serve to indicate character of Morden as a service centre. (Table 4). Of the total people employed in Morden, about 63 per cent were employed in tertiary industries, mainly trades, service and public administration. Another 30 per cent were employed in secondary industries, most in manufacturing and the remaining 5 per cent in agriculture.

TABLE 4

EMPLOYMENT BY INDUSTRIAL CLASSIFICATION - MORDEN, 1961.

Industrial Classification	Employment	Sub-total	Percent
Primary			
Agriculture	41		
Forestry	1		
Fishing/Trapping	0		
Mining	5	47	4.9
Secondary			
Manufacturing	198		
Construction	92	290	30.3
Tertiary			
Transportation	75		
Trade	196		
Finance	24		
Service	200		
Public Admin./Defence	110	605	63.3
Unspecified	14	14	1.5
Total		956	100.0

Source: Regional Analysis Program, Output Part 1A, p. 348.

Summary

Important in the historical development of Morden and Winkler have been the peculiar circumstances of ethnic and economic conditions at the time. The building of the railways and the rural settlement of the region caused the town site of Morden to be established. Ethnic differences within the population, reinforced by conditions generated in the two World Wars, caused the establishment and growth of Winkler. The generally healthy national economy as exemplified by rising prices of agricultural produce assured the continued existence of Winkler and Morden. Today, both communities are important service centres in the constellation of communities in southern Manitoba.

CHAPTER II

THEORETICAL ORIENTATION

Pursuant to the aim of this thesis, it is necessary to set the theoretical framework upon which the analysis will be based. Important to the analysis are the concepts of systems, planning, urban region and projection. The concept of the system and the urban region defines the nature and limits of the area under consideration, whereas, the notion of planning and projection determine the future state of the area under study. However, since the prime intent of the thesis takes on the form of a specific case study, the theoretical considerations will be concise.

System

In general, a system is understood as a "set or arrangement of things so related or connected as to form a unity or organic whole."⁷ The definition of any particular system is arbitrary since the universe may be thought of as a set of systems, each contained within a larger system. The system to be defined is a system because it contains

⁷Webster's New World Dictionary.

interrelated parts , but it will also be part of a series of larger systems .

Stating the system to be studied can be accomplished by identifying the parts or components and the connections or interactions of these parts . In the context of urban studies , the parts of the system are human activities occurring within particular spaces . The connections between these parts are human communications . These activities and communications take on physical form ; activities occurring within adapted spaces and channels as physical forms of communication.⁸

As an illustration of this concept , reference may be made to the example of a building . The parts of an office building are the various rooms , each adapted for a specific human activity . Some spaces are used for office activities , others for lounges , waiting areas or storage . These human activities occurring within adapted spaces are linked by human communications (movement of people and messages) through physical channels such as hallways , stairs , elevators and local telephone lines . Yet this building may

⁸ For a more complete account of the concept of a system see J. B. McLoughlin, Urban and Regional Planning: A Systems Approach, Faber and Faber Ltd., London, 1970; and Christopher Alexander, Systems Generating Systems, Inland Steel Products Company, 1967.

be part of a larger system -- the block. The office building will form part of the space in the block and be linked to other spaces such as parking facilities, restaurants, banks, etc. Each block may be thought of as a part of another larger system -- the city. The commercial, residential, industrial blocks and recreational areas of a city are then linked by channels of communication in the form of roads, streets, telephone lines and mail delivery. It is possible to go on to show how the city is linked with the rural area around it and to other cities as well.

The connections between elements of a system are indicators of the mutual dependence which exists between these elements. This mutual dependence leads to changes in one element in the system, being transmitted by the connections and causing changes in the whole system or at least in those elements which are strongly linked to the originating elements.⁹ A change in the industrial activity of a community, say the addition of a new firm, may have repercussions upon other activities within the community. The additional jobs created may necessitate the need for additional residential living units to accommodate the new families, which may in turn require the expansion of public services such as schools, recreational facilities, etc.

⁹Olof Warneryd; Interdependence in Urban Systems, Elanders Boktryckerie Aktielog, Goeteborg, Sweden, 1968, pp. 134-137.

Planning and the Urban System

In any discourse related to planning it is important to establish what is meant by the term "planning." The term has often been misused and misunderstood, with the result that there are almost as many meanings attached to the word as there are persons who use it. Unless it is clearly defined for the purpose of analysis, there is a danger of falling into a confusion of philosophical concepts which are not possible to resolve within the scope of this thesis.

In essence, community planning is as straightforward as this. Planning seeks to regulate or control human activities and communications so as to minimize the bad effects and to promote the good effects of the physical, economic and social environment within which people live. A community will continue to exist and all the activities will go on whether or not conscious planning is undertaken. But the purpose of planning is to "make these activities easier, better and more equitable."¹⁰ The main objective of planning is to achieve the best possible environment for carrying out the various activities of the people who make up the community.

Before any conscious planning activity can take place, it is

¹⁰G. A. P. Carrothers, Planning in Manitoba, Winnipeg, 1956, p. 31.

necessary to identify the goals and objectives which are to be attained. All the present aspects relevant to these goals must be analyzed, as well as the past trends and processes which have brought about these conditions. Following such an analysis, predictions can be made concerning future trends and possibilities. Only then is it possible to consider various courses of action to accomplish the goals and objectives originally conceived.

This thesis is concerned with the urban complex and its larger region and more particularly with urban spatial structure and urban growth. A community may be viewed in two related perspectives - one in which human interaction occurs within a particular community, and one in which these interactions extend to places beyond the community. Of the interactions extending beyond the community, two kinds may be distinguished. There are those interactions which spatially form a contiguous area around the community and those which extend to widely scattered places over the face of the earth. The importance to a community of these two forms of outside interactions depends to a large degree on the size and function of the community in question.

The Urban Region

Normally a community characterized as a service centre forms the core of a larger area which it serves. With distance outward from the town the amount of interaction tends to weaken, and eventually the influence of some competing urban centre exceeds that of the town under consideration. This may be called the trade area or umland of a community.¹¹ A distinct interdependence exists between each service centre and its umland. The agriculturally based

The concept of the cities sphere of influence originated with the theoretical works of Walter Christaller. This concept and other related aspects such as the spatial distribution of cities and hinterland delimitation have been thoroughly investigated in the following representative works: Brian J. L. Berry and William L. Garrison, "A Note on Central Place Theory and the Range of a Good", Economic Geography, Vol. 34, pp. 304-311, 1958. Brian J. L. Berry, William L. Garrison and Allen Pred, Central Place Studies: A Bibliography of Theory and Applications, Bibliography Series No. 1, Regional Science Research Institute, Philadelphia, 1961. Walter Christaller, Central Places in Southern Germany, (translated from "Die Zentralen Orte in Suddeutschland" by Carlisle W. Baskin), Prentice-Hall, Inc., Englewood Cliffs, N. J., 1966. Robert E. Dickinson, City and Region: A Geographical Interpretation, Routledge & Kegan Paul Ltd., London, 1964. Chauncy D. Harris and Edward L. Ullman, "The Nature of Cities", Annals of the American Academy of Political and Social Science, Vol. 242, pp. 7-17, 1945. Edward Ullman, "A Theory of Location of Cities", American Journal of Sociology, Vol. 46, pp. 853-864, 1941. H. L. Green, "Hinterland boundaries of New York City and Boston in Southern New England", Economic Geography, Vol. 31, pp. 283-300, 1955. Robert E. Park, "Urbanization as Measured by Newspaper Circulation", American Journal of Sociology, Vol. 35, pp. 60-79, 1929-1930. Smailes, A. E., "The Analysis and Delimitation of Urban Fields", Geography, Vol. 32, pp. 151-161, 1947.

industries within the community depend upon the farmers in the rural areas to bring their produce to market. In turn the rural population depends on the community for its supply of tertiary goods and special social services.

In addition to this contiguous area of interaction, a service centre may also interact with other centres nearby or with cities distributed throughout the nation. For example, a town may obtain some raw materials for manufacture from some distant point; the finished product reaching nation wide markets. Although these non-contiguous points of connection are by no means unimportant to a service centre, they will be considered only to a limited extent. It is, however, important to note that as a community grows in size and importance its main function may also change. As urban development proceeds the interactions with non-contiguous areas may become as important or even more so than the interactions with the contiguous area. This thesis will be dealing with a 'closed system' as opposed to an 'open system'.

Given the complexity of the human interactions of the defined system, a convenient indicator of these interactions is required. Land use, in a very broad sense, is an expression of human activities.

"It is concerned with living patterns of households, productive patterns of industries and the many other classes of activity patterns that exist and interact as elements in the urban social system".¹² Land use may be considered as the manifestation of a communities' economic and social activities.

Projection

The collection and analysis of information concerning human interactions determines the nature of the system under study. In order to plan, a way must be found to anticipate the future state of the system.

The problems of projection or prediction have long occupied civilized men. The process of prediction or projection cannot be accomplished in the absence of a theory or generalized statement. For example, the projection of population relies on past observations. Studies have revealed the importance of natural changes (births, deaths), the effects of migration and structure of the population in influencing future change. However, in many cases it may not be possible to have a detailed picture of the underlying structure of the phenomenon under

¹²F. Stuart Chapin Jr., Urban Land Use Planning, University of Illinois, Urbana, 1965, p. 79.

study. Only totals for the past periods may be known. In such cases a generalized statement or theory will be crude and the projection may simply be an extrapolation of the observed trend.

There are, then, two kinds of projections; the simple projections which operate on limited data and extrapolate a series of observations, and analytical projections which depend on more detailed information in which the projected value is often the dependent variable derived from projections of independent variables. Analytical methods usually lead to more accurate results since they account for or assume differing patterns of change in the components of a situation as opposed to simple projections where the internal structure of a phenomenon is ignored.

A system is composed of activities in spaces linked by communications in channels and therefore it seems logical that these elements are to be projected. Since the elements of communication are considered as an aspect of these activities, only the problem of activity projection need be concentrated on.

The activities of a system can be broken down into three basic parts: production (economics), general welfare (public institutions) and residential (population). These parts interrelate in complex ways.

The residential activities may be seen as being dependent on productive activities, and similarly a dependence of general welfare activities on the size and nature of the population. It can also be argued that economic activities are dependent upon population. Nevertheless, it can be concluded that there exists a strong interdependence between economic activities and population, stronger than that of general welfare activities with either. Because of these differences in interdependence, projection of population and economic activities should be performed first, followed by derivations of general welfare activities from the former results. Since land use may be seen as the manifestation of economic and social activities, an accurate population projection is needed from which to derive future economic and social space requirements.

While techniques for estimating space requirements vary according to the class of land use, there is a common methodological pattern to the analysis of all classes. The first step involves the recapitulation of the existing characteristics of development for all land use categories. Thus the present distribution of the land use in each community must be examined and the variations in the intensity of use in each of these areas are determined. The second step involves the derivation of space standards from the growth index, in this case the

population projection. Density standards are employed for industrial, commercial and residential uses and dwelling units per acre of land used for residential purposes being the measure for the latter. Educational needs can be estimated by tabulating the number of children and young people who will be of school age at various times in the future, from the population projection. For certain types of recreation areas, local adaptation of general empirical standards of minimum site size or total population may be used. The main purpose of future space requirements is to determine the relative availability and potential of land in the study area to accomodate activities at a future date. Future space requirements must be allocated through specific location requirements. Location requirements take the form of guiding principles and standards for the placement of uses of land. These requirements are derived from the basic interaction needs of residents, firms and institutions within the study area.

Summary

Having established the theoretical basis upon which the analysis will rest, the nature and extent of the Morden-Winkler system may be determined. The integration of concepts of systems and urban regions with planning theory and the process of prediction established the groundwork necessary for a more complete understanding of the object of the analysis.

CHAPTER III

DEFINING THE AREA OF INFLUENCE

A great variety of criteria may be used to delimit the umland of a service centre. The choice of criteria on which to base service areas depends on several factors. One is the nature of the community and its region. Thus for the service centres like Winkler and Morden, the area from which people come to purchase goods and services may be of special interest. One must observe the interaction of those activities which are good indicators of the interrelationship between the town and its tributary area. Employing one activity, say the most important one, to represent a town's umland would not adequately delimit the trade area since different activities have varying areas which they serve. Furthermore, the most important indicator of the extent of influence of one town is not necessarily the most important for another town. At best, then, the selection of criteria remains a subjective problem. To better represent a communities' umland a large number of criteria should be delimited, from which to ultimately identify the area of interdependence.

Various techniques may be used for delimiting the service area of a community. It is possible to use mathematical models based on the relative population size of the town or the retail floor area of a town's business district in relation to its distance from other similar centres such as Reilly's Law of Retail Gravitation.¹³ Service areas may also be delimited by direct consultation with local businessmen or interviews with people in the rural areas.

Service and Shopping Preference

A questionnaire survey was carried out during the summer of 1971 as part of the Regional Analysis Program.¹⁴ That part of the questionnaire concerned with community interrelations contained data about where the people interviewed went for certain goods and

¹³ An explanation of Reilly's Law of Retail Gravitation and its variations may be found in: R. E. Murphy, The American City, McGraw-Hill, New York, 1966, p. 62.

¹⁴ The Regional Analysis Program was conducted by the Department of Industry and Commerce, Regional Planning Branch in conjunction with the Carvalho-Page Group (University of Manitoba) as program advisors. The objective of the program was to collect and analyze information about Southern Manitoba for the purpose of assisting planning and decision-making at all levels of government. The author was involved in the program during the summer months of 1971 in the capacity of a field-co-ordinator in the Pembina Valley area. As part of the inventory of data, a questionnaire survey of 5,000 people was conducted. The questionnaire contained information on community interrelations (mobility of people) and community satisfaction.

services. The interviews included samples of rural and urban dwellers. Of the rural interviews conducted (farm and rural non-farm), 90 were relevant in determining the nature of Winkler and Morden's umland. For the purpose of this thesis, the questionnaire results were tabulated and graphically illustrated using a desire line technique.¹⁵

To proceed with the analysis, the relationship between the level of service and community size must be identified. Different sized communities offer different levels of service. The smallest places offer only limited goods and services. As the size of the community increases it offers these same goods and services and more specialized ones as well, and so on up the scale. The lower order goods and services of small centres require a smaller trade area than do the more specialized goods and services of larger centres. The smaller trade area of a small centre may "nest" within the trade area of a larger centre. Delimiting the umland of service centres such as Winkler and Morden, must be done in relation to the competing centres of approximately the same size and therefore, function. The towns of Carman, Morris, Altona

¹⁵ To ensure confidentiality, the maps were drawn so as not to reveal the exact location of the respondents' place of residence by omitting the scale and road network.

and to a limited degree, Manitou, were considered as competing service centres.

The goods and services analyzed may be grouped into two groups; those ubiquitous or local goods and services usually found in all sizes of communities, and those goods and services which usually only appear in larger service centres. The ubiquitous goods and services are analyzed first.

Map 4 indicated the grocery shopping preferences of the people interviewed. It is obvious that Winkler dominated in attracting grocery shoppers. Some people even came from the areas west of Morden to shop in Winkler. Those interviews which do not indicate a preference to any of the centres marked on the map went to more local places for their grocery supplies.

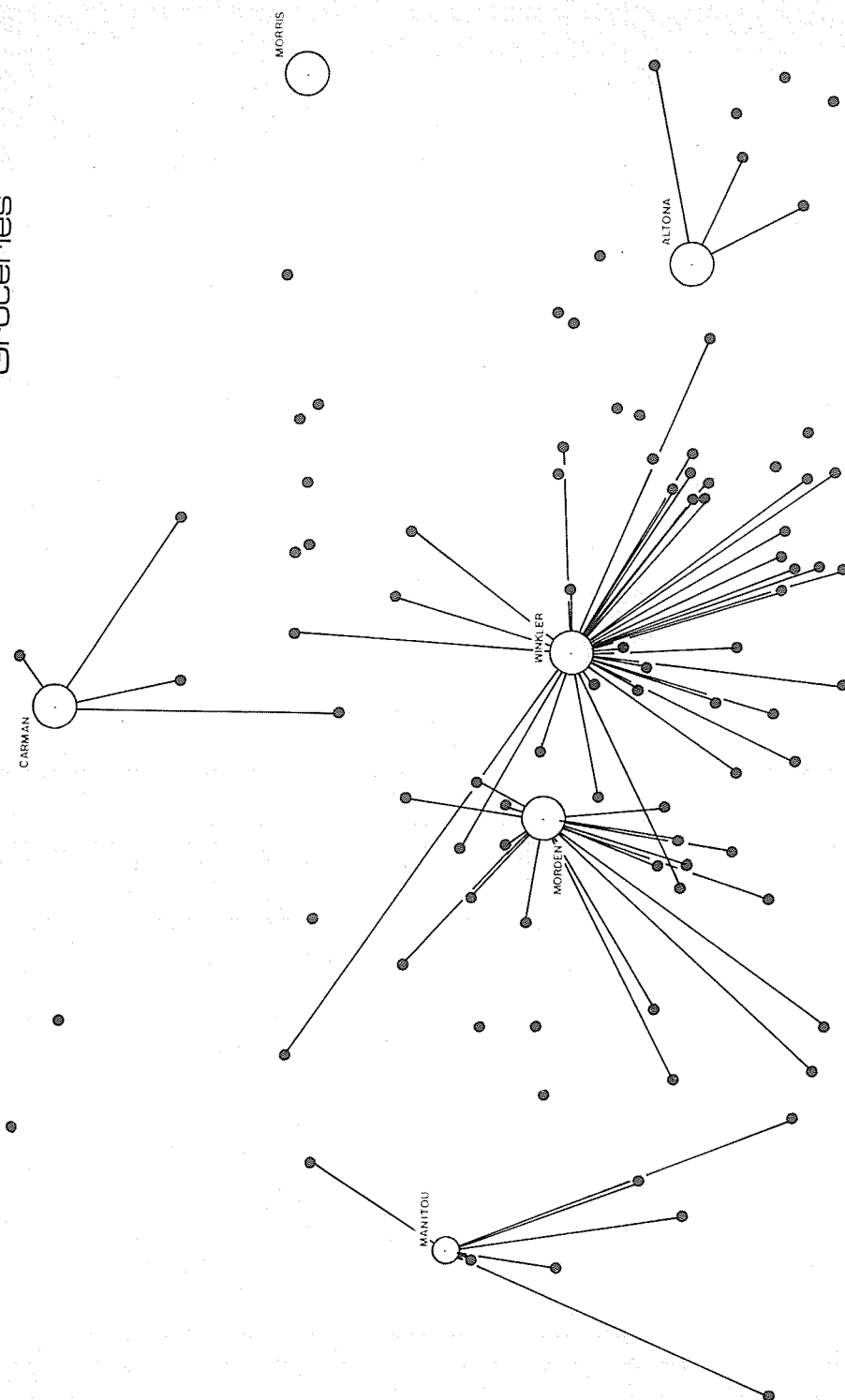
Beauty and Barber service (Map 5) as an indicator of Morden and Winkler's trade area, is also a very local activity, but again there are exceptions to the generally independent umland that such a service might have.

Banking and/or Credit Union service (Map 6) as an indicator, although not as ubiquitous as grocery services, does occur in centres

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Groceries

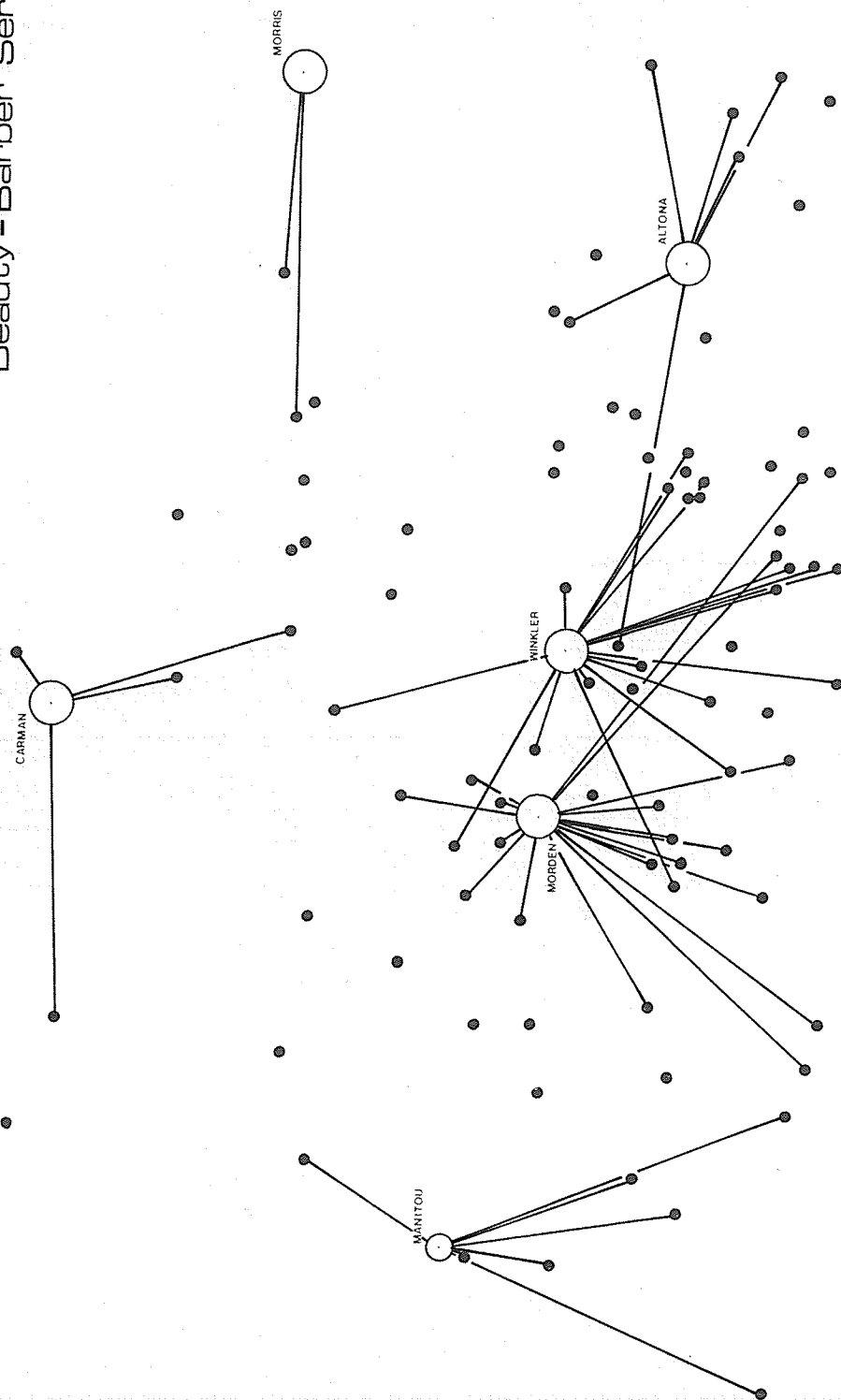
41



SHOPPING & SERVICE PREFERENCES

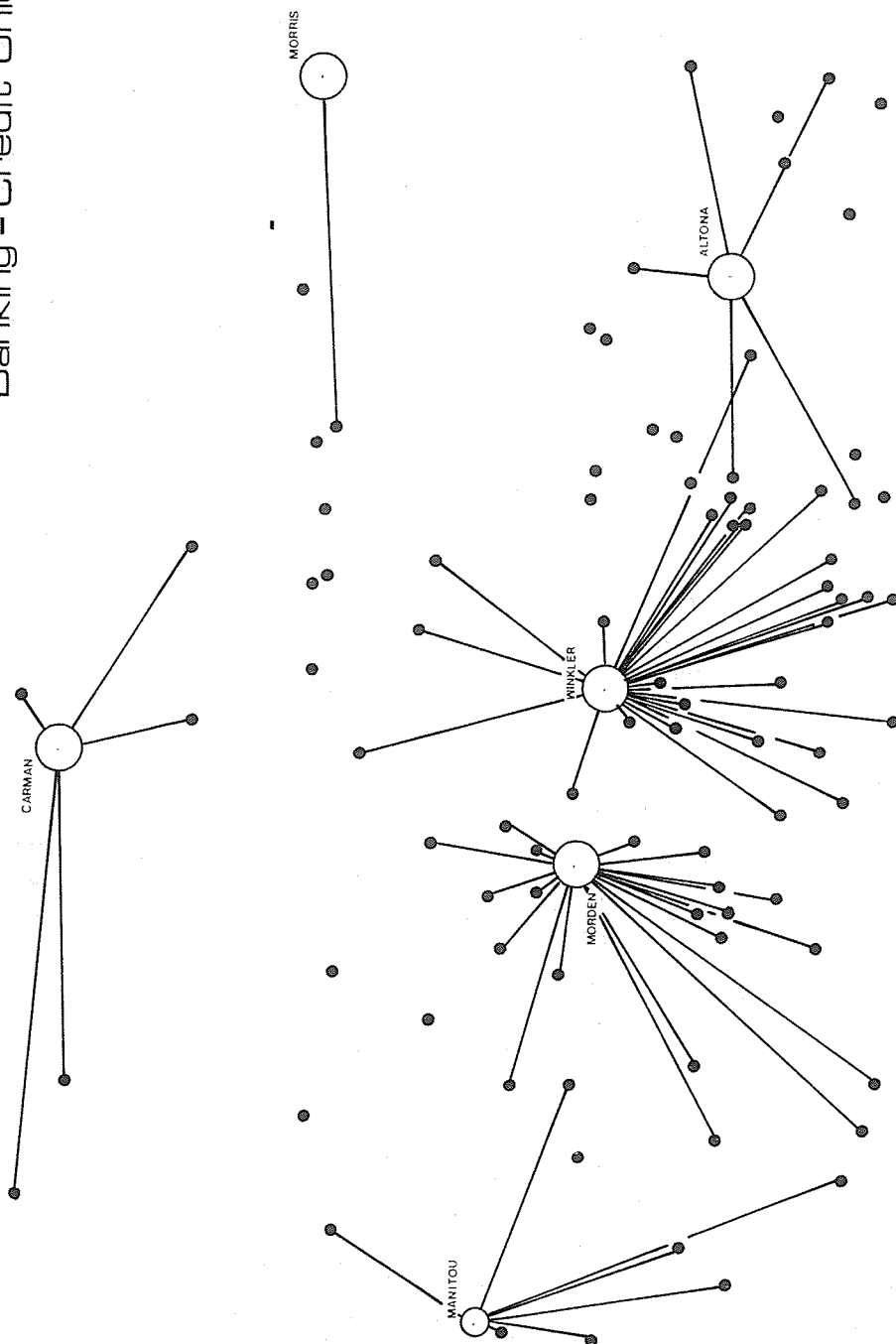
RURAL SAMPLE Beauty - Barber Service

42



SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Banking - Credit Union



smaller than Winkler and Morden. This map clearly indicates separate and distinct umlands around each town. Similar interpretations may be made for Hardware (Map 7), Radio-TV Sales and Repairs (Map 8), Lumber and Building Materials (Map 9) and Service Stations (Map 10).

It should be noted that Winkler's umland extends more to the south and east than north. The area south and east of Winkler has a relatively high density rural population which is predominately of Mennonite and German origin. Morden, on the other hand, attracts more people from the west, that area being mainly Anglo-Saxon.

Liquor (Map 11) as an indicator for delimiting the umlands of Winkler and Morden did not prove successful, since many of the interviewees did not respond to this question. However, from the limited responses plotted, Morden dominates in liquor sales, as it should since Morden is the only place of the two having a Liquor Commission Outlet.¹⁶

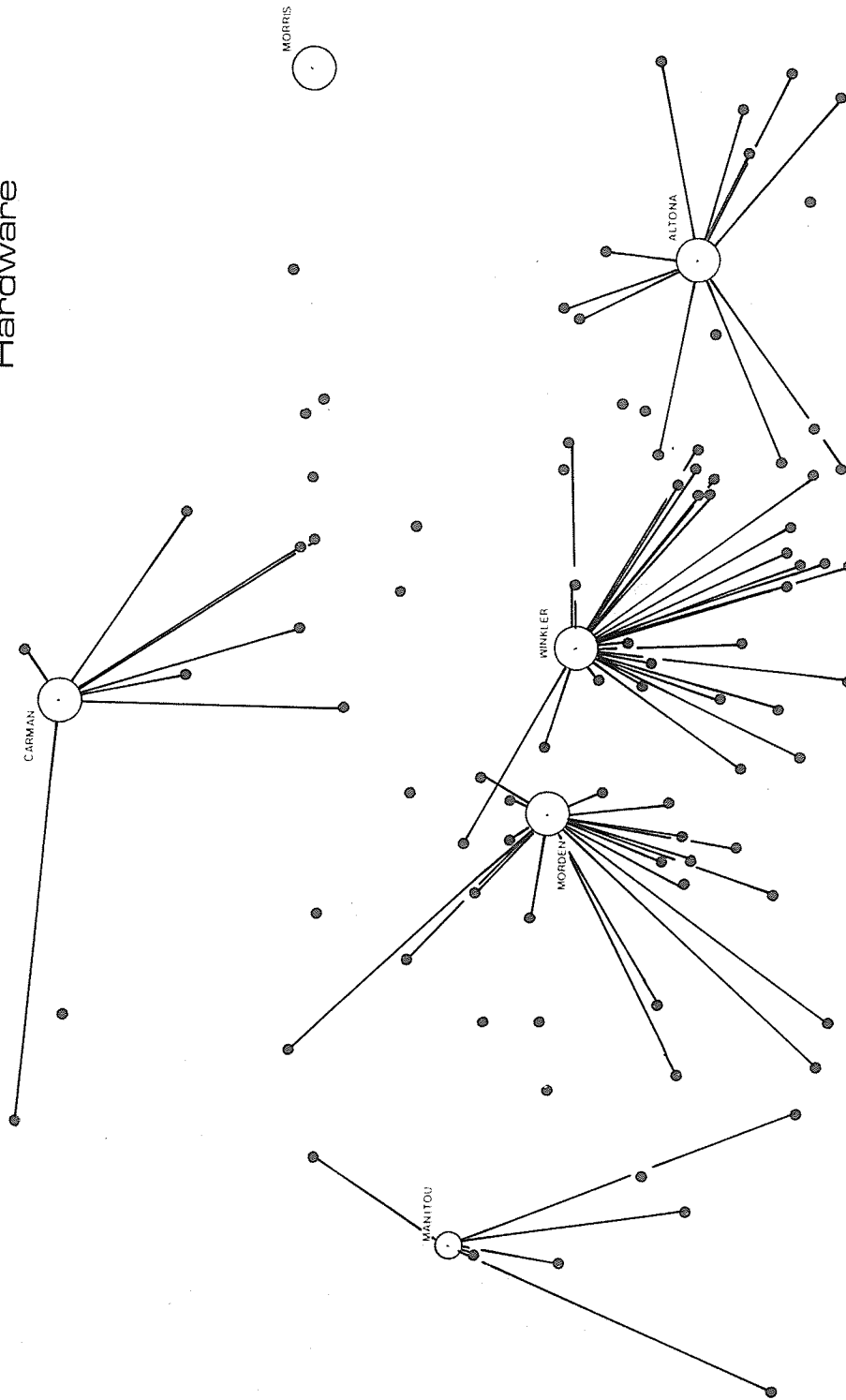
Although the results generally show that Winkler and Morden do have distinct and separate umlands, the several exceptions indicate

¹⁶ Note that some people indicated Winkler as their choice for liquor purchases. This apparent discrepancy is accounted for by a misunderstanding of the exact question asked. Winkler does have a beer vendor outlet.

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Hardware

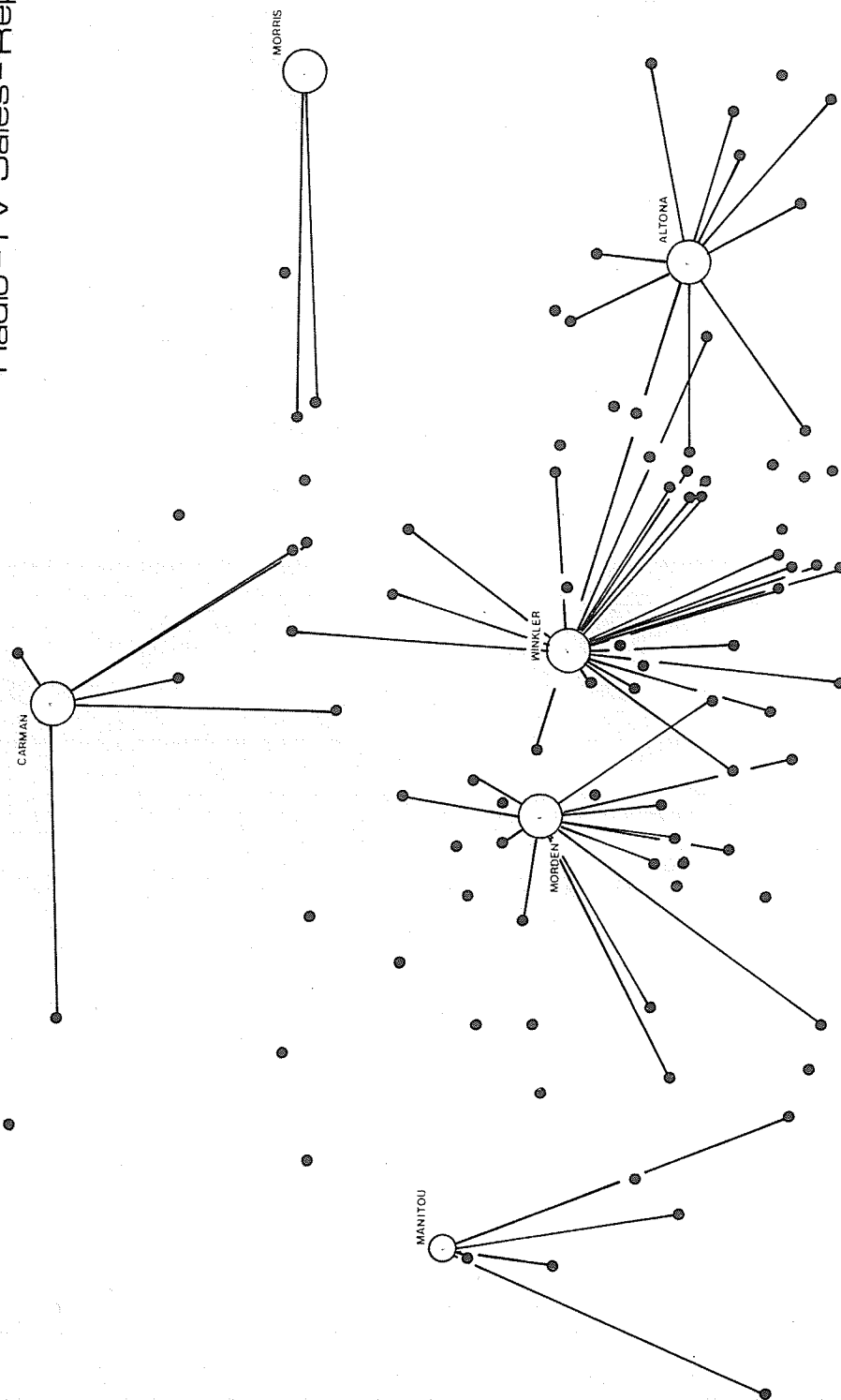
45



SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Radio-TV Sales - Repairs

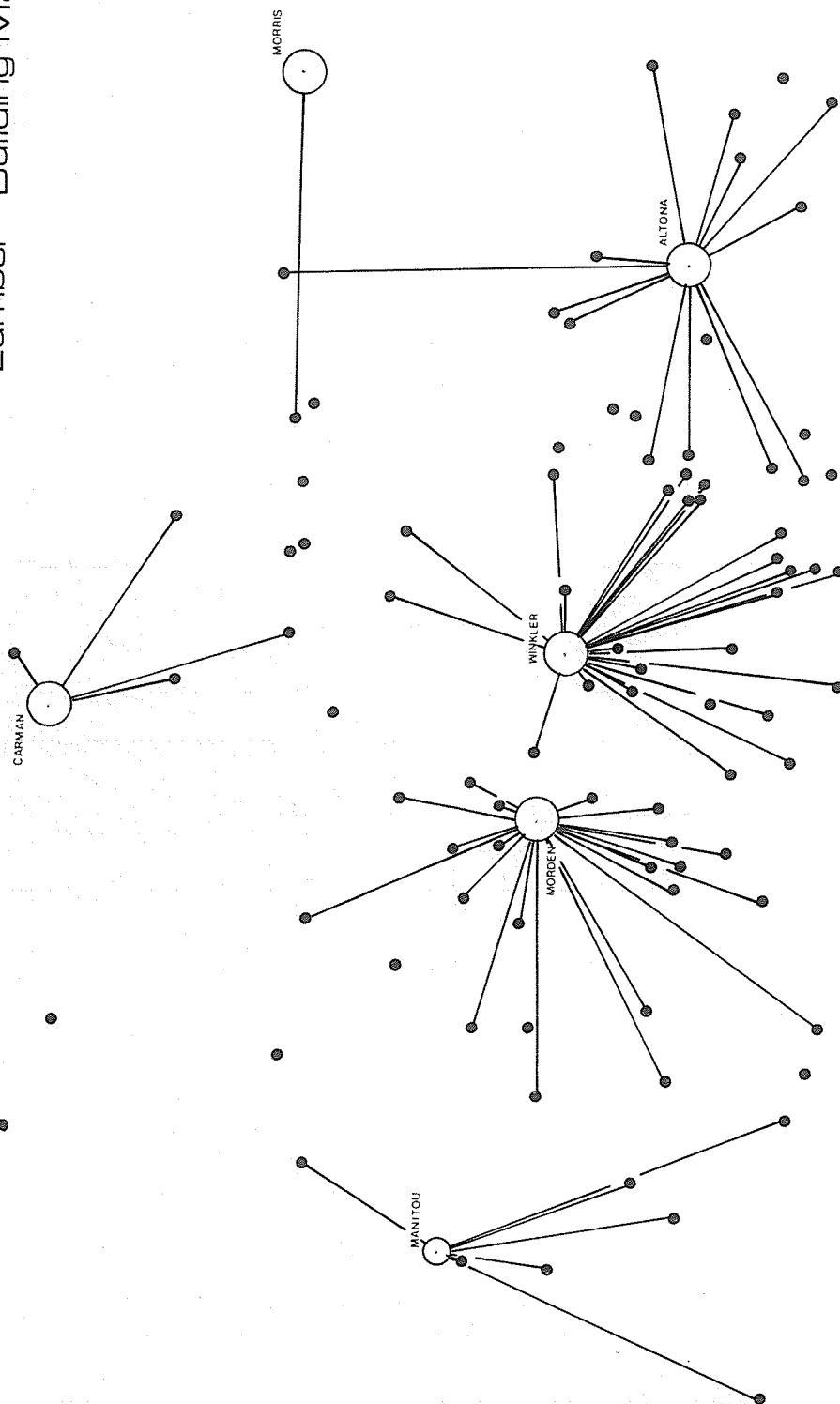
46



SHOPPING & SERVICE PREFERENCES

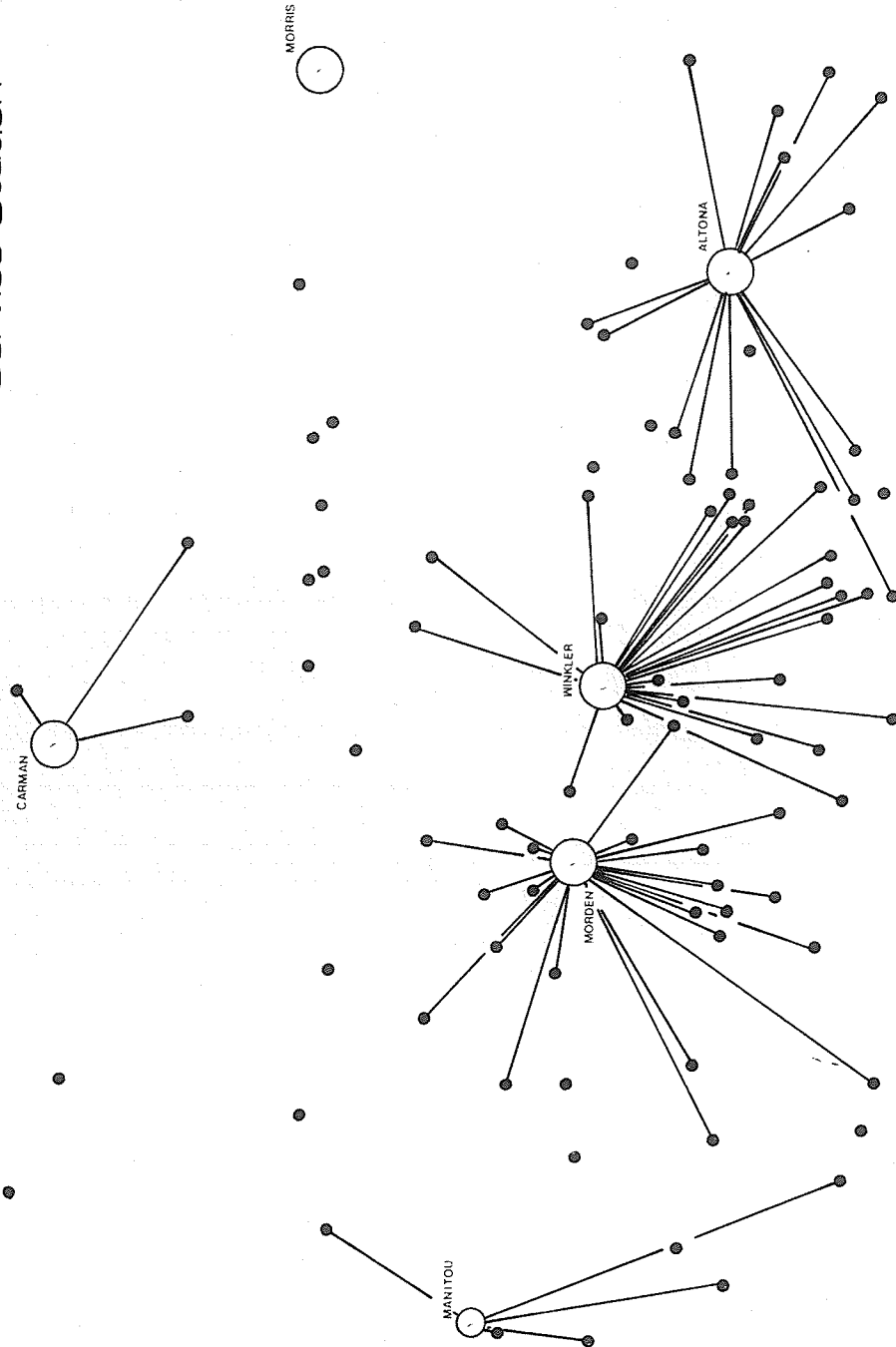
RURAL SAMPLE Lumber - Building Material

47



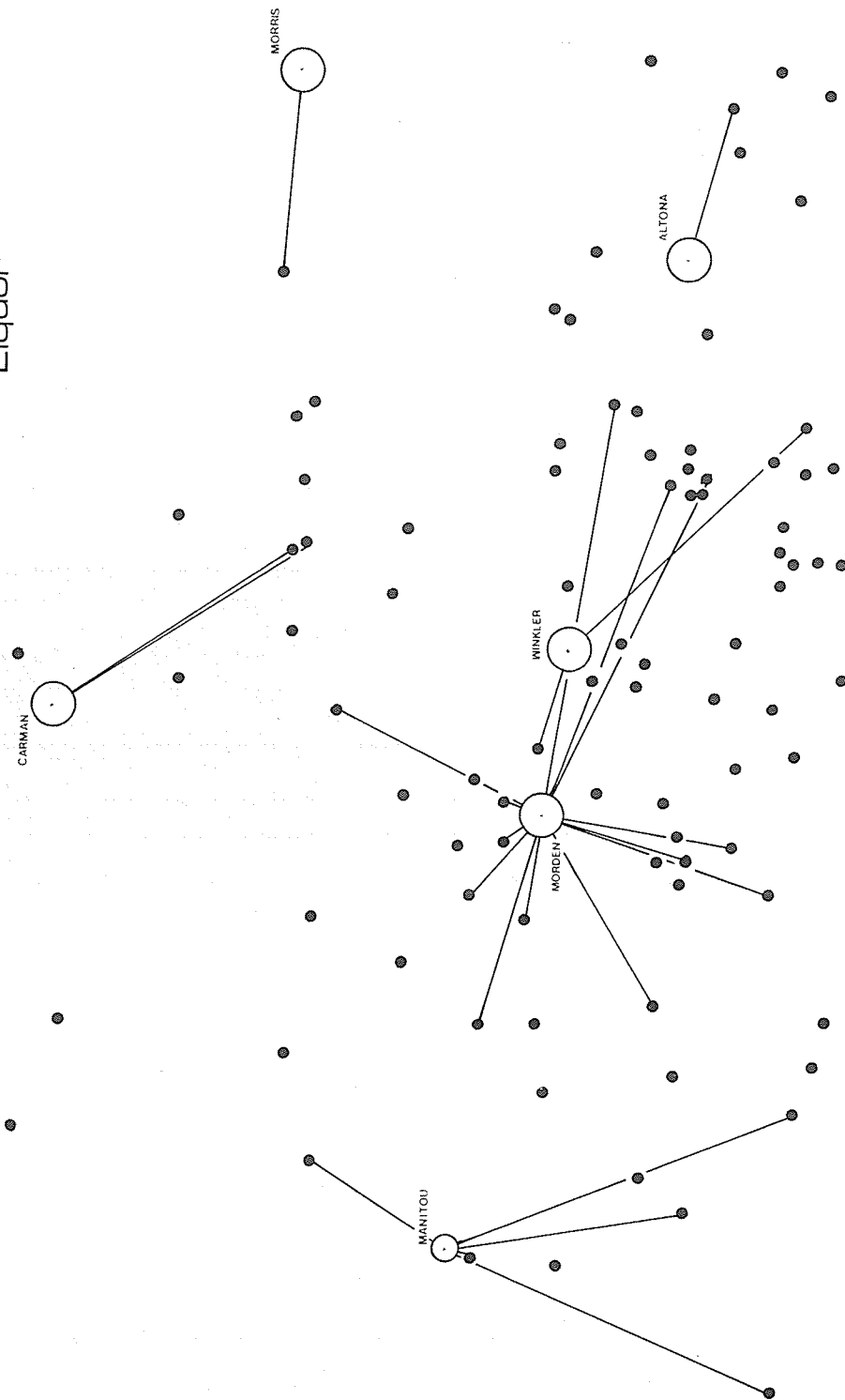
SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Service Station



SHOPPING & SERVICE
PREFERENCES

RURAL SAMPLE
Liquor



a significant deviation. There are some instances where Winkler serves an area which would normally be served by Morden and vice versa. The areas served by both communities in these instances are relatively small because the goods and services are more ubiquitous and therefore also occur in nearby smaller centres which effectively compete with Winkler and Morden.

Those goods and services which are generally less ubiquitous show strikingly different results.

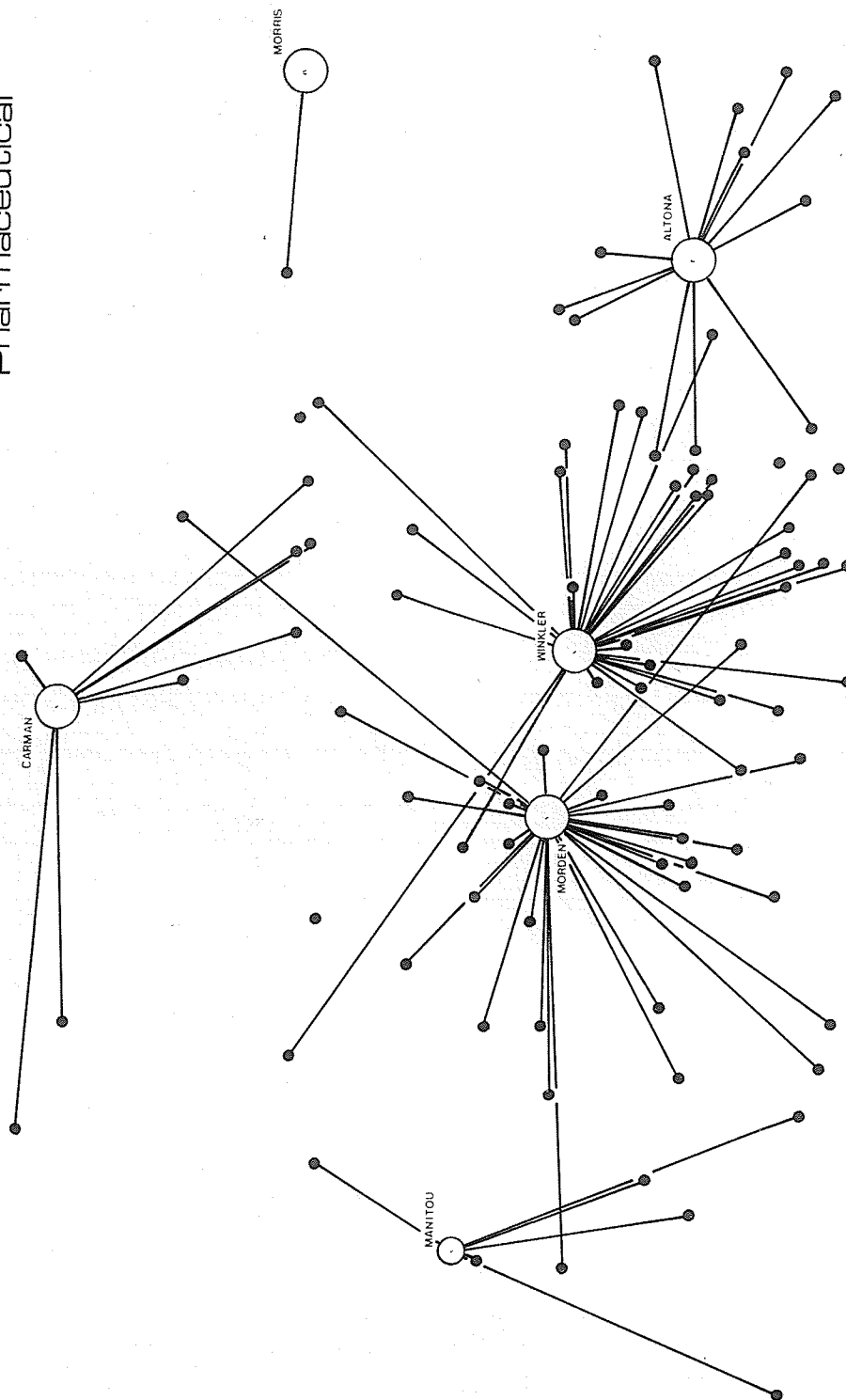
The preferences that people interviewed had in obtaining pharmaceutical goods are indicated on Map 12. In this case, both Morden and Winkler draw customers from a relatively larger area. Note here again that some people come from distant locations west of Morden to Winkler and some people east of Winkler travel to Morden.

The questionnaire responses to the purchase of clothing are plotted on Map 13. Again a larger area of influence is noted for both communities and some overlap in umlands is apparent. Those points having no desire lines to any of the plotted communities usually went to Winnipeg to purchase clothing for themselves and members of their family. The same preferences were observed for Furniture purchases (Map 14) and Appliance purchases (Map 15).

SHOPPING & SERVICE PREFERENCES

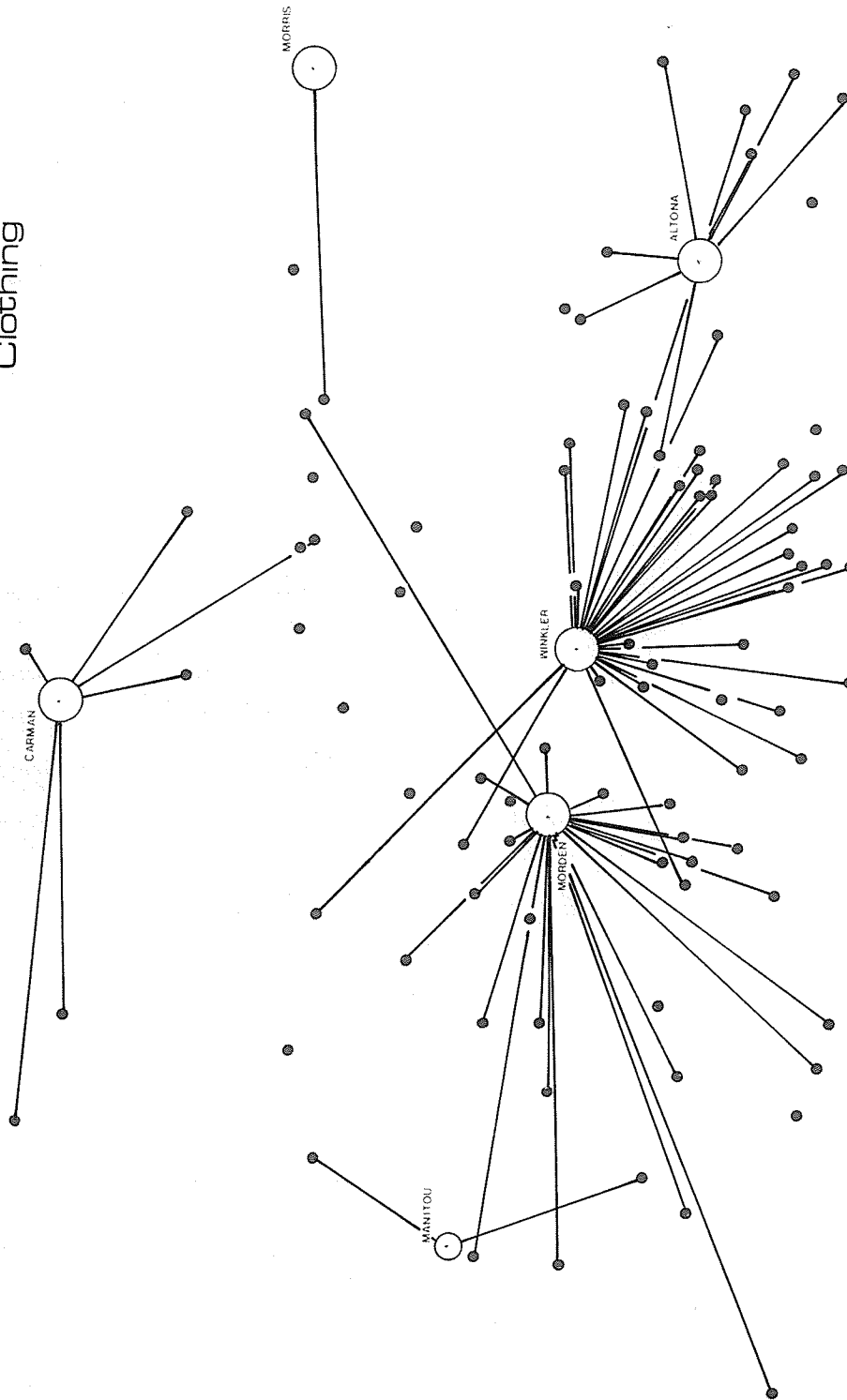
RURAL SAMPLE Pharmaceutical

51



SHOPPING & SERVICE
PREFERENCES

RURAL SAMPLE
Clothing

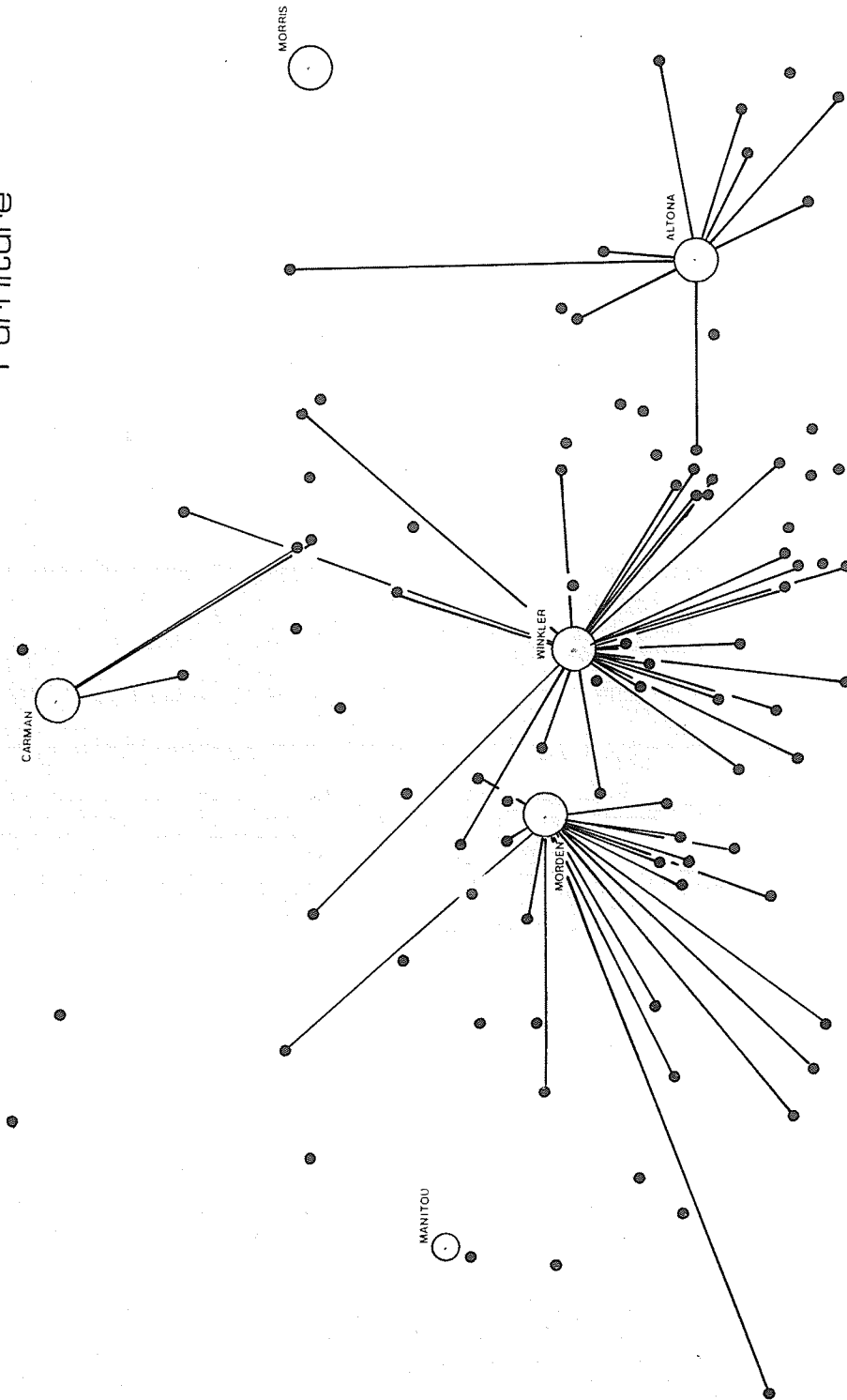


Map 13

SHOPPING & SERVICE
PREFERENCES

RURAL SAMPLE
Furniture

53

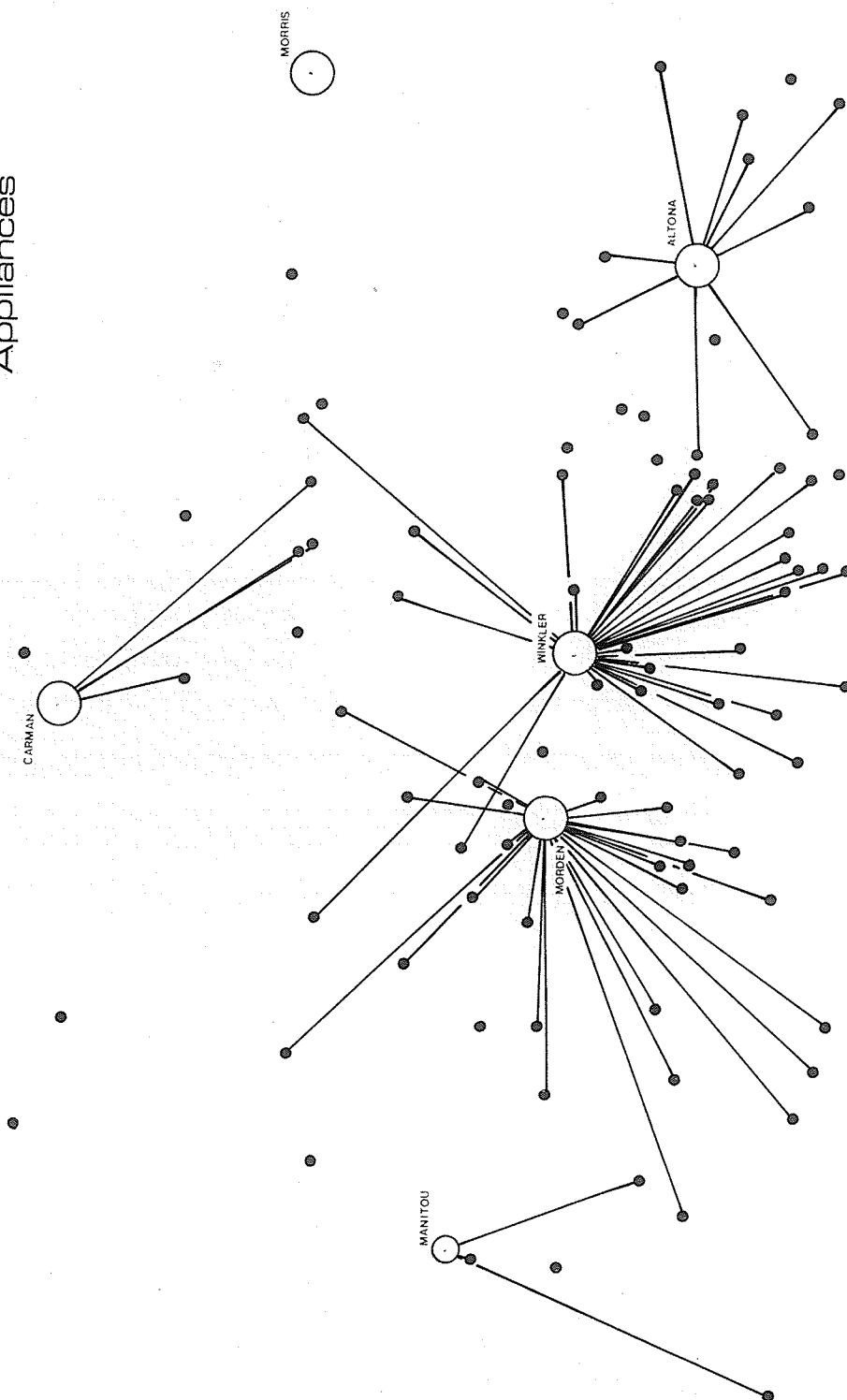


Map 14

SHOPPING & SERVICE
PREFERENCES

RURAL SAMPLE
Appliances

54



Map 16 is probably the best indicator that Winkler and Morden share a similar umland. The interwoven desire lines signifying preferences to car purchases delimits the interdependent area of influence shared by both communities. To a lesser degree, preferences of Hospital service (Map 17) reinforces this interdependence.

Morden is the only community of the two having dental, legal and veterinarian services and as such serves those areas generally dominated by Winkler as well as its own. (Maps 18, 19, 20).

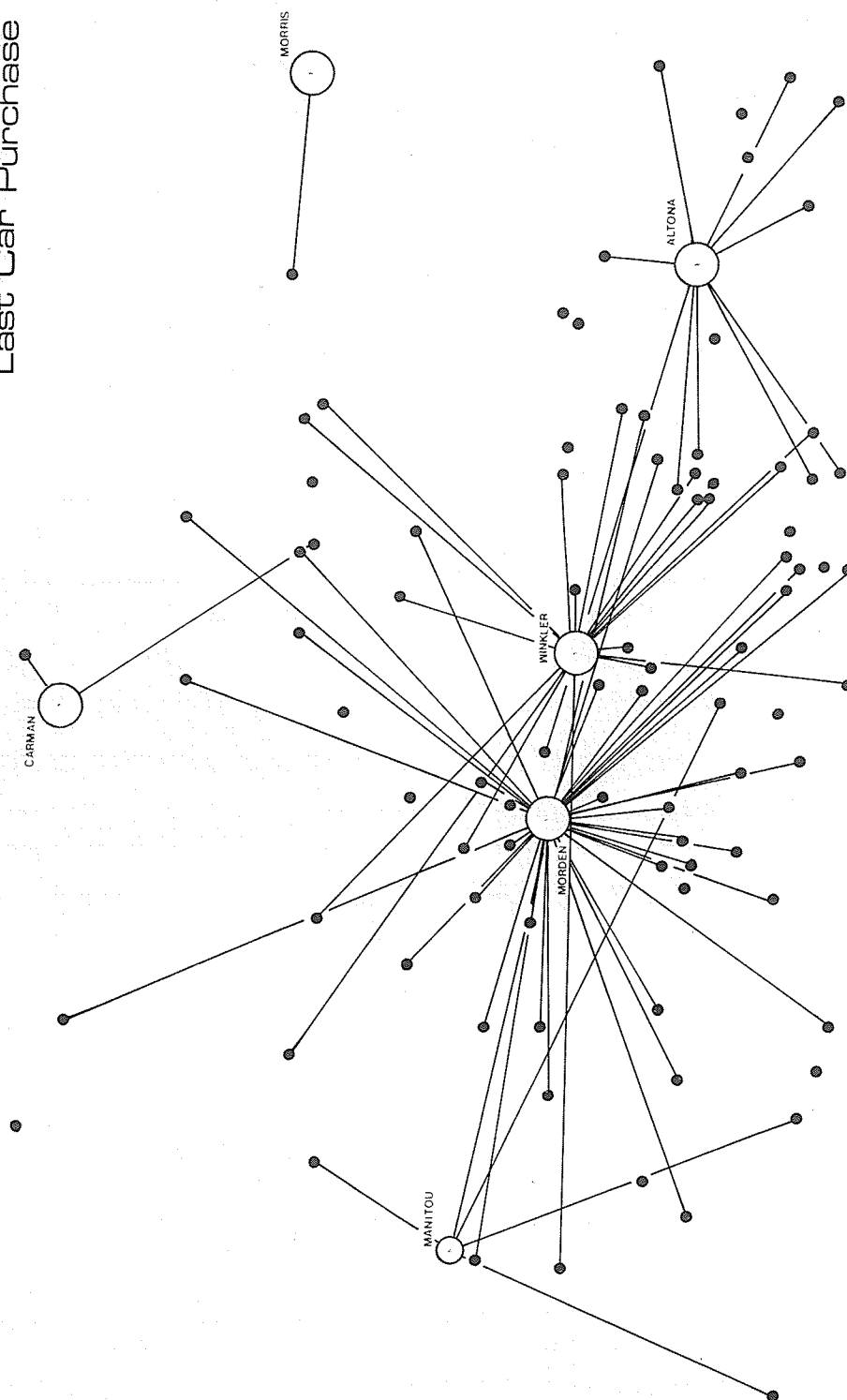
Map 21 reveals the main shopping preferences of the people interviewed. The areal extent of both umlands are somewhat smaller than the afore-mentioned areas of influence, with a slight dominance of the area by Winkler. Winkler has generally superior shopping outlets and more competitive prices than does Morden.

The indications from the preferences that rural people have for higher order goods and services suggests that Winkler and Morden do, to a significant degree, share a similar trading area. Morden serves a totally larger area in those services which do not occur in Winkler. The attraction of Winnipeg as a supplier of some higher order goods and services is also affecting the area of influence that Morden and Winkler share.

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Last Car Purchase

56

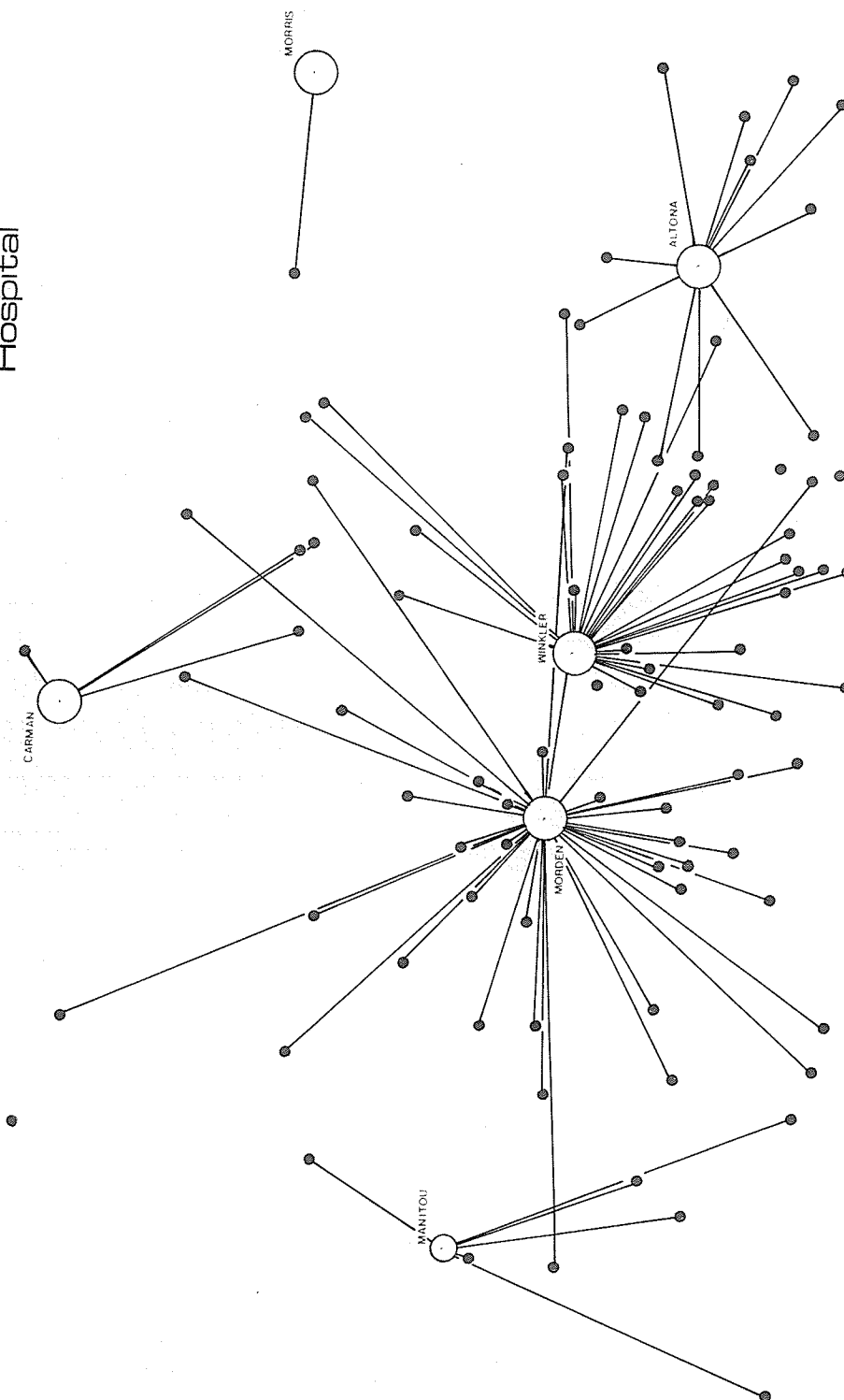


Map 16

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Hospital

57

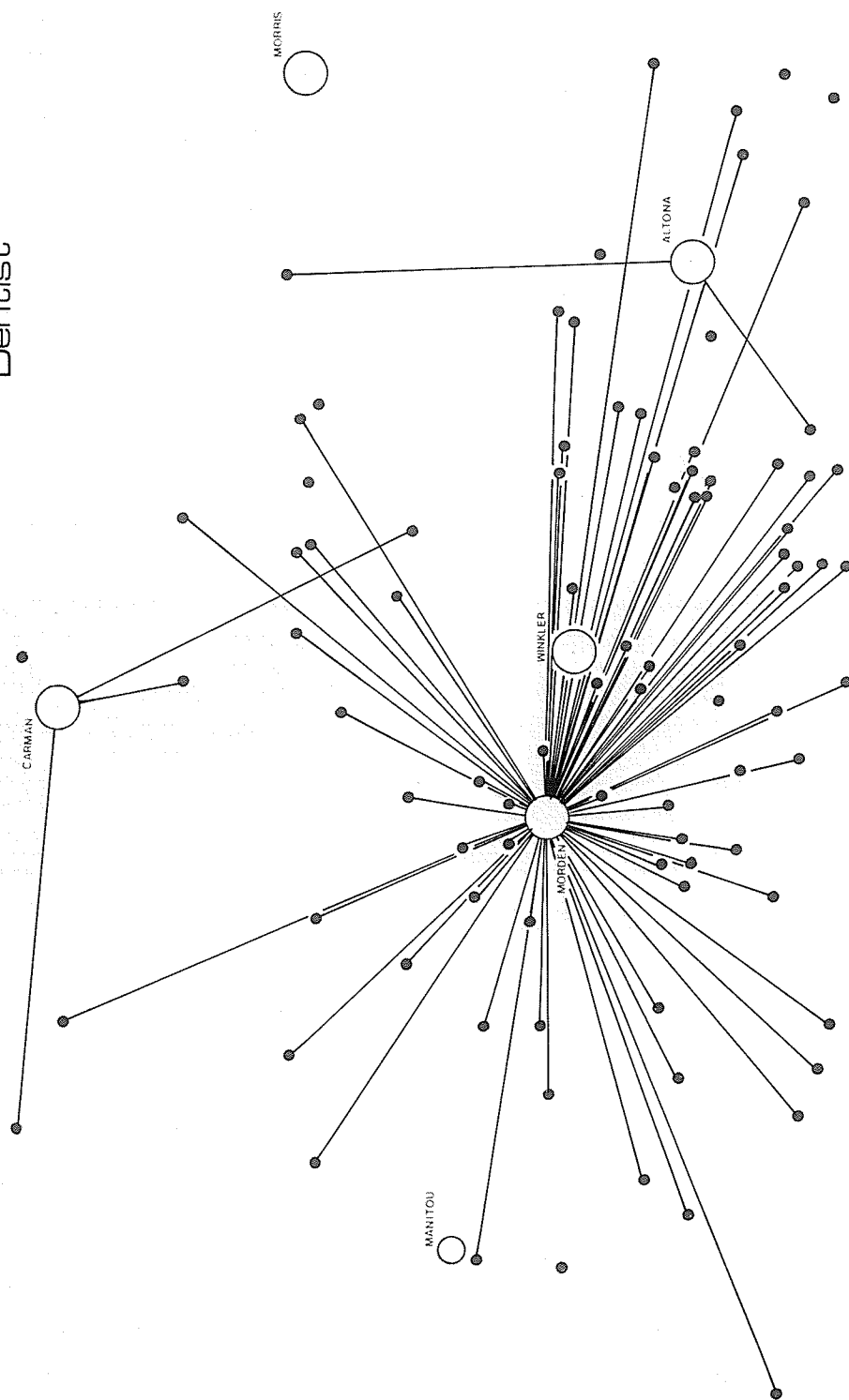


Map 17

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Dentist

58

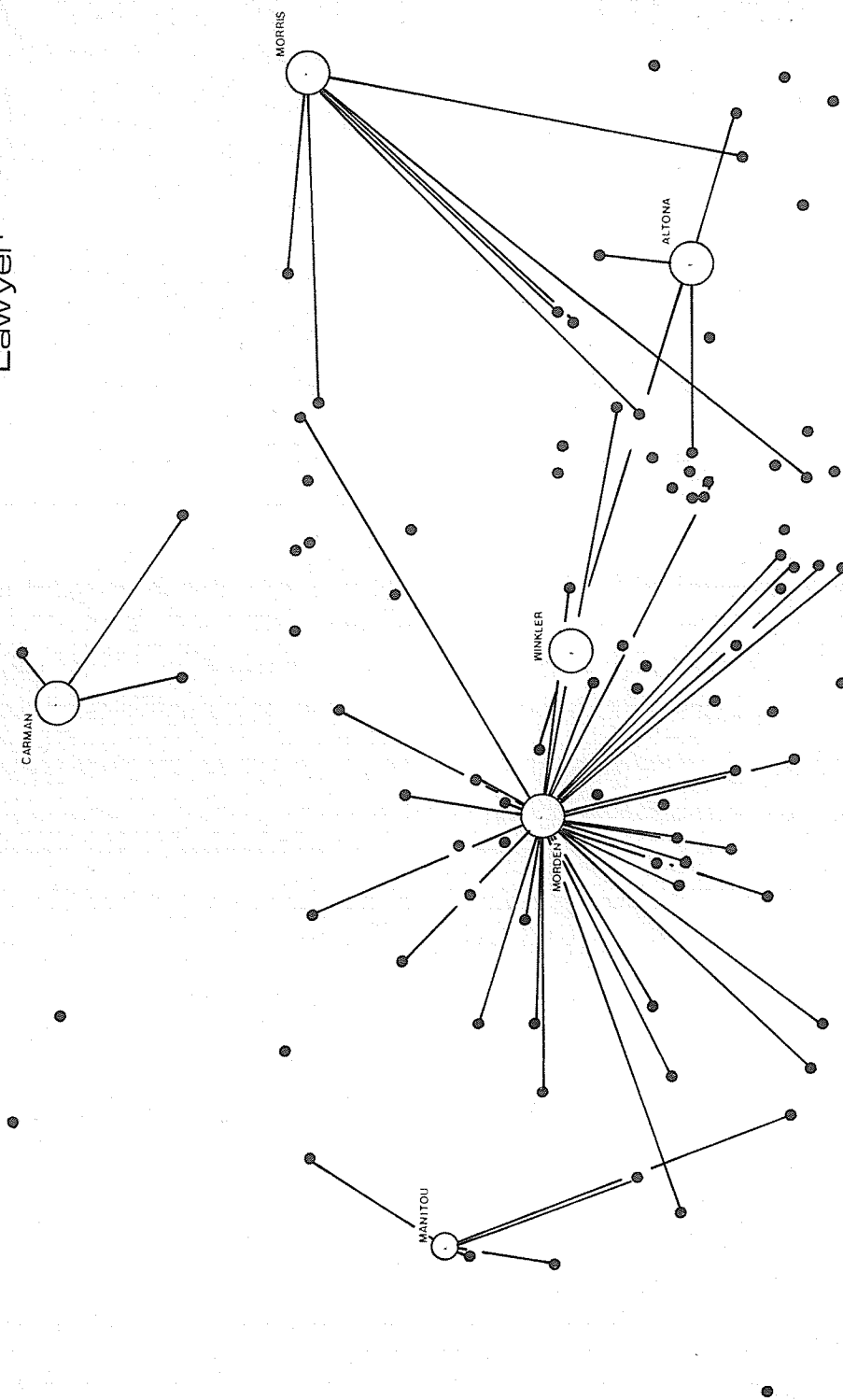


Map 18

SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Lawyer

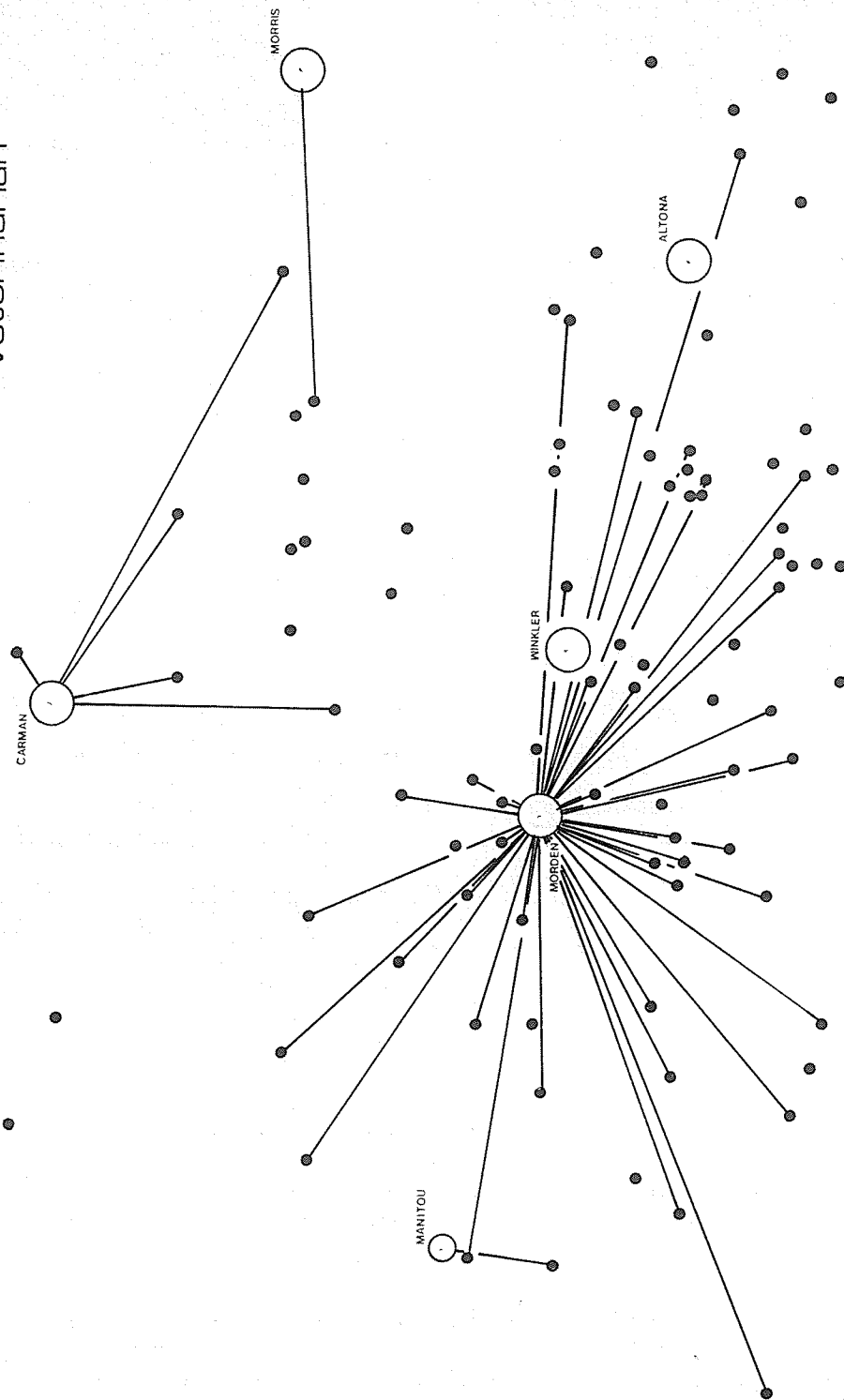
59



Map 19

SHOPPING & SERVICE
PREFERENCES

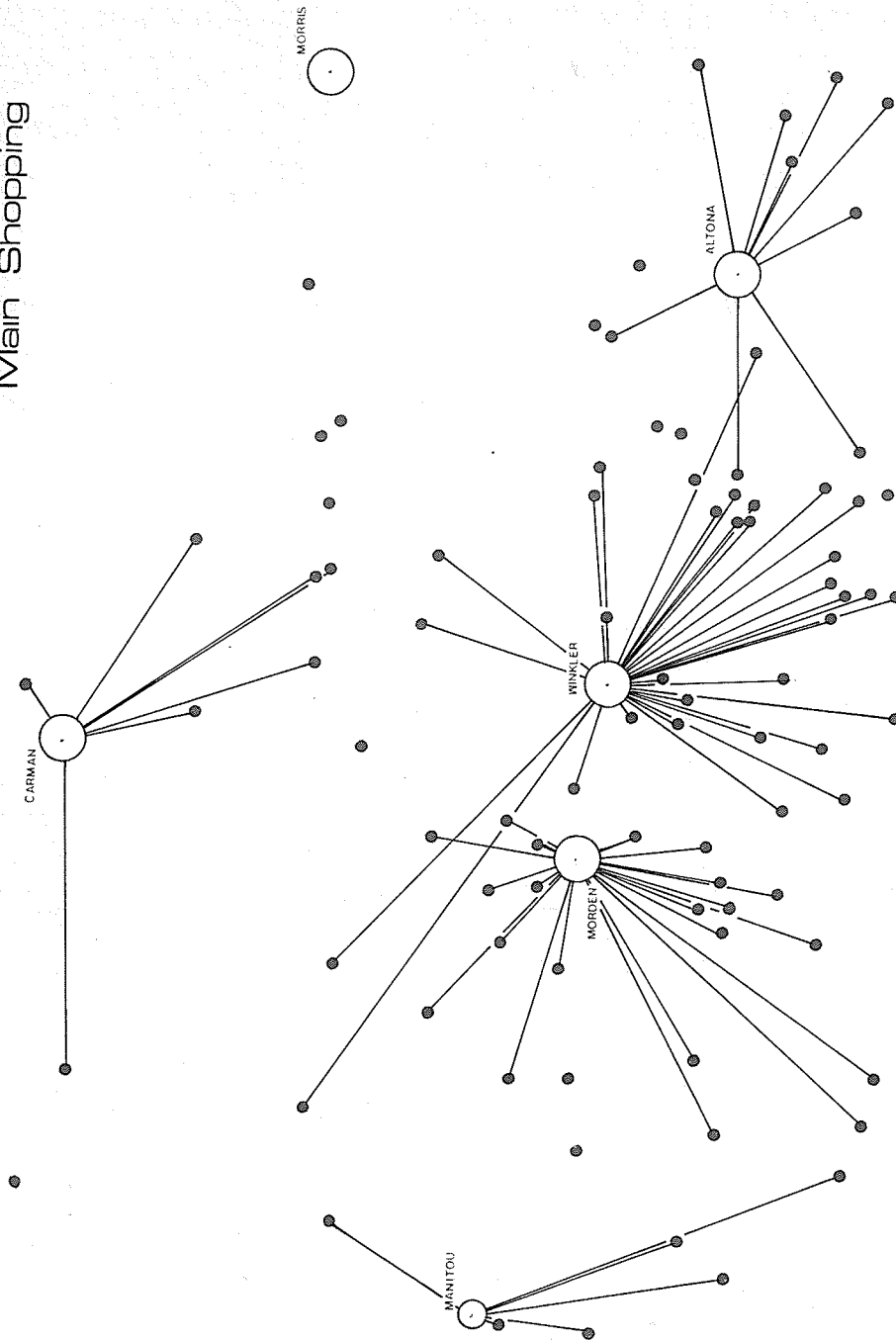
RURAL SAMPLE
Veterinarian



SHOPPING & SERVICE PREFERENCES

RURAL SAMPLE Main Shopping

61



Other studies also support these findings. Lamb delimited the areas of influence of Morden and Winkler using a time distance factor.¹⁷ He defined the primary trading area as a maximum driving time of 15 to 20 minutes at 45 m.p.h. to reach the centre and the secondary area as 25 to 30 minutes driving time at 45 m.p.h. to reach the centre. Lamb delimits the trade areas thus:

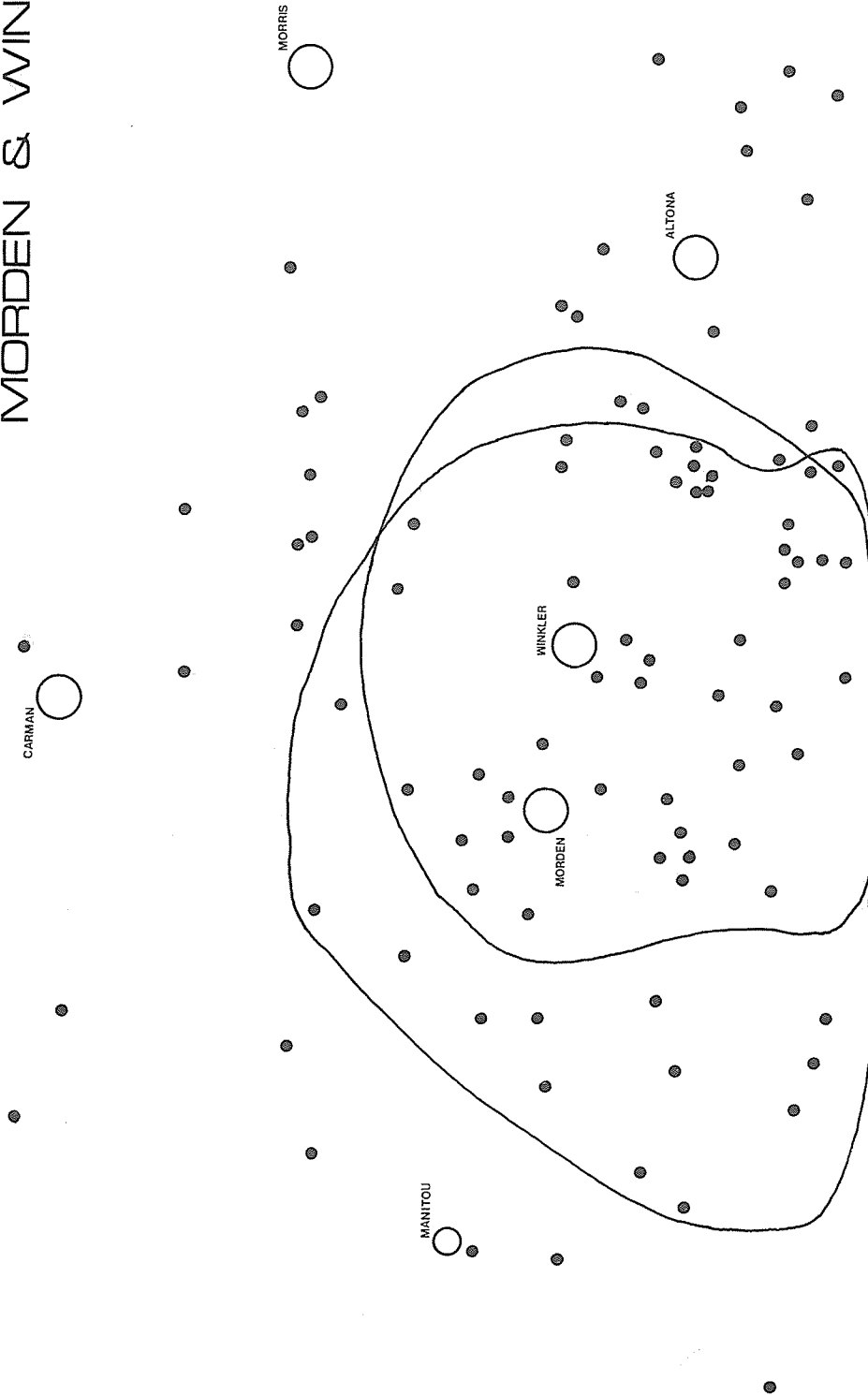
"Morden's primary service area is about five hundred square miles in area and has a population of seventy-five hundred people. Its secondary area is about eight hundred fifty square miles and a population of some fifteen thousand.

Winkler serves a primary area of some three hundred fifty square miles and a population of eight thousand people. Its secondary area is almost identical in both area and population to that of Morden." ¹⁸

The trade areas which Lamb delimited corresponds with the results of the questionnaire findings. (Map 22). It can be concluded from this that Morden and Winkler do truly share a relatively similar area of influence. If two communities share the same umland it may follow that they are themselves highly

¹⁷James E. Lamb, "Some Aspects of the Settlement Geography of Southern Manitoba" (unpublished Master's Thesis, University of Manitoba, 1970).

¹⁸Ibid., p. 119.

TRADE AREA OF
MORDEN & WINKLER

Map 22

dependent upon one another.

Summary

An analysis of the Regional Analysis Program sample questionnaires in the vicinity of Morden and Winkler indicate that generally, the umlands of both communities are interwoven. The outcome of the preferences that local people indicated for the purchase of ubiquitous goods and services suggests separate and distinct trade areas. However, for the purchase of higher order goods and services both Morden and Winkler share the combined larger area of influence normally served by each.

CHAPTER IV

URBAN INTERDEPENDENCE

The previous chapter concerned itself with the problem of delimiting the area of influence of Morden and Winkler. In order to complete the analysis the interdependence between the urban parts of the system must also be shown. Interdependence can be measured by the communication or degree of interaction which exists between any two urban centres. These interactions may take on several forms and can be classified into four general categories:

- 1) Persons - eg. by walking, riding, driving a car, etc.
- 2) Material Goods - eg. manufacturing goods, components, parcel post, water, oil, etc.
- 3) Information - eg. telephone messages, radio telecommunications, etc.
- 4) Energy - eg. electrical transmissions.

Only the interaction by people will be considered here. The tabulated results of the questionnaire survey conducted by the Regional Analysis Program may again be used to measure mutual dependence, this time between urban centres.

The preferences indicated by the people interviewed in each community were considered to be representative of the preferences of the total population. Each community was sampled in accordance to its population size, with a larger sample drawn in favour of the smaller communities. As outlined in the previous chapter, the urban interviewees were asked to respond to the same questions pertaining to service and shopping habits.

The interaction between any two communities must flow in both directions for them to be mutually dependent. If the flow of communication is only in one direction it may be interpreted as meaning that the community exhibiting that flow is dependent upon the community which does not reciprocate.

Service and Shopping Preferences

The number of interviews conducted in Morden totalled 50. Table 5 shows that a majority of the residents prefer to shop in Morden for most retail items. However, some people do shop in Winkler especially for groceries, clothing, furniture and automobiles. Little or no interaction is noted with smaller centres near Morden or with equivalent sized communities such as Altona or Carman. Although most people also obtained higher order

TABLE 5

SHOPPING AND SERVICE PREFERENCES - MORDEN

Regional Analysis Program Questionnaire: Question - To what community do you or members of your household usually go for the following purchases or services (when needed)?
(Sample size - 50).

Frequencies	Morden	Winkler	Altona	Carman	Darlingford	Winnipeg	Steinbach
Groceries	46	4	-	-	-	-	-
Pharmaceutical	50	-	-	-	-	-	-
Beauty/Barber	50	-	-	-	-	-	-
Bank/Credit Union	50	-	-	-	-	-	-
Clothing	34	4	-	-	-	7	-
Liquor	13	-	-	-	-	-	-
Hardware	43	1	-	-	-	2	-
Furniture	29	8	-	-	-	6	-
Appliances	40	4	-	-	-	1	-
Radio/TV repair	42	1	-	-	2	1	-
Laundry/Dry Clean	44	-	-	-	-	-	-
Lumber/Bldg. Mat.	44	-	-	-	-	1	-
Service Station	44	-	-	-	-	-	-
Auto Repair & Access.	43	-	1	-	-	-	-
Last Car Purchase	35	1	1	-	-	5	1
Hospital	45	4	-	-	-	1	-
Doctor	45	4	-	-	-	-	-
Dentist	44	1	-	-	-	-	-
Lawyer	40	-	-	-	-	-	-
Veterinarian	12	-	-	-	-	-	-
Elementary School	15	-	-	-	-	-	-
Secondary School	10	-	-	-	-	-	-
Church	49	-	-	-	-	-	-
Work	33	-	-	1	1	-	-
Post Office	50	-	-	-	-	-	-
Main Shopping	49	1	-	-	-	-	-

services in Morden, some again went to Winkler for medical services. Admittedly, the tabulated questionnaire results do not show a striking degree of interaction, but the results are significant in that what little interaction does exist, is conducted primarily with Winkler.

The residents interviewed in Winkler preferred to shop in their community for most lower order goods. (Table 6). Exceptions are liquor purchases and car repairs. A more pronounced indication is the attraction of Winkler residents to Winnipeg, especially for the purchase of clothing and cars. Again, as in Morden, little or no interaction is noted with smaller centres and centres of equal status, other than Morden. The frequencies tabulated for higher order services indicates that Winkler residents express a significant preference to travel to Morden and to some extent, Winnipeg. Winkler residents especially go to Morden for dental and legal services.

The questionnaire results indicate that Morden and Winkler are relatively self-sufficient communities in terms of the specific goods and services analyzed. Although the interaction which exists between them is fairly small, it is significant that even less, if any, interaction occurs with other neighbouring communities. Superficially, both towns show some attraction to Winnipeg for certain goods and services.

TABLE 6

SHOPPING AND SERVICE PREFERENCES - WINKLER

Regional Analysis Program Questionnaire: Question - To what community do you or members of your household usually go for the following purchases or services (when needed)?

(Sample size - 50).

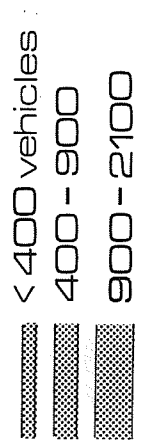
Frequencies	Winkler	Morden	Altona	Carman	Plum Coulee	Roland	Manitou	Winnipeg	Steinbach
Groceries	49	-	-	-	1	-	-	-	-
Pharmaceutical	50	-	-	-	-	-	-	-	-
Beauty/Barber	46	-	-	-	-	-	-	1	-
Bank/Credit Union	47	1	-	-	1	-	-	-	-
Clothing	43	-	-	-	-	-	-	7	-
Liquor	2	5	-	-	-	-	-	-	-
Hardware	43	-	-	-	1	-	-	1	-
Furniture	41	-	-	-	1	-	-	2	-
Appliances	42	1	-	-	1	-	-	1	-
Radio/TV repair	42	-	-	-	-	1	1	2	-
Laundry/Dry Clean	44	-	-	-	-	-	-	-	-
Lumber/Bldg. Mat.	43	-	-	-	-	-	-	-	-
Service Station	36	1	-	-	1	-	1	-	-
Auto Repair & Access.	33	3	-	-	1	-	1	-	-
Last Car Purchase	18	12	-	1	-	-	-	6	1
Hospital	43	4	1	-	-	-	-	-	-
Doctor	43	4	1	-	-	-	-	2	-
Dentist	5	33	-	-	-	-	-	4	-
Lawyer	7	12	-	-	-	-	1	1	-
Veterinarian	3	2	-	-	-	-	-	-	-
Elementary School	9	-	-	-	-	-	-	-	-
Secondary School	8	-	-	-	-	-	-	-	-
Church	48	1	-	-	-	-	-	-	-
Work	18	1	-	-	1	-	-	-	-
Post Office	50	-	-	-	-	-	-	-	-
Main Shopping	49	-	-	-	1	-	-	-	-

Traffic Volumes

Indicators other than personal shopping preferences may also be employed to measure the interaction of people between two communities. Through the co-operation and assistance of the Manitoba Highways Department, annual average daily traffic counts were obtained for 1966 and 1970. The data, though statistically sound, does vary from actual counts. It was modified by application of variables to provide Annual Average Daily Traffic (AADT). Further, technical experience in traffic analysis would be required and knowledge of circumstances at the time of the count would have to be considered if the information were to be used for anything other than a general indicator as in the context of this discussion.

Nine traffic count stations were obtained on major roads and highways converging on Winkler and Morden. Six of these stations were located on Provincial Trunk Highways (PTH) and three on Provincial Roads (PR). Figure 3 shows the 1966 traffic volumes in the Winkler-Morden area. Observe that all provincial trunk highways had traffic volumes, on the average, between 900-2100 vehicles per day. The provincial roads accommodated traffic volumes of less than 400 vehicles per day. Provincial

TRAFFIC VOLUME 1966 (AADT)



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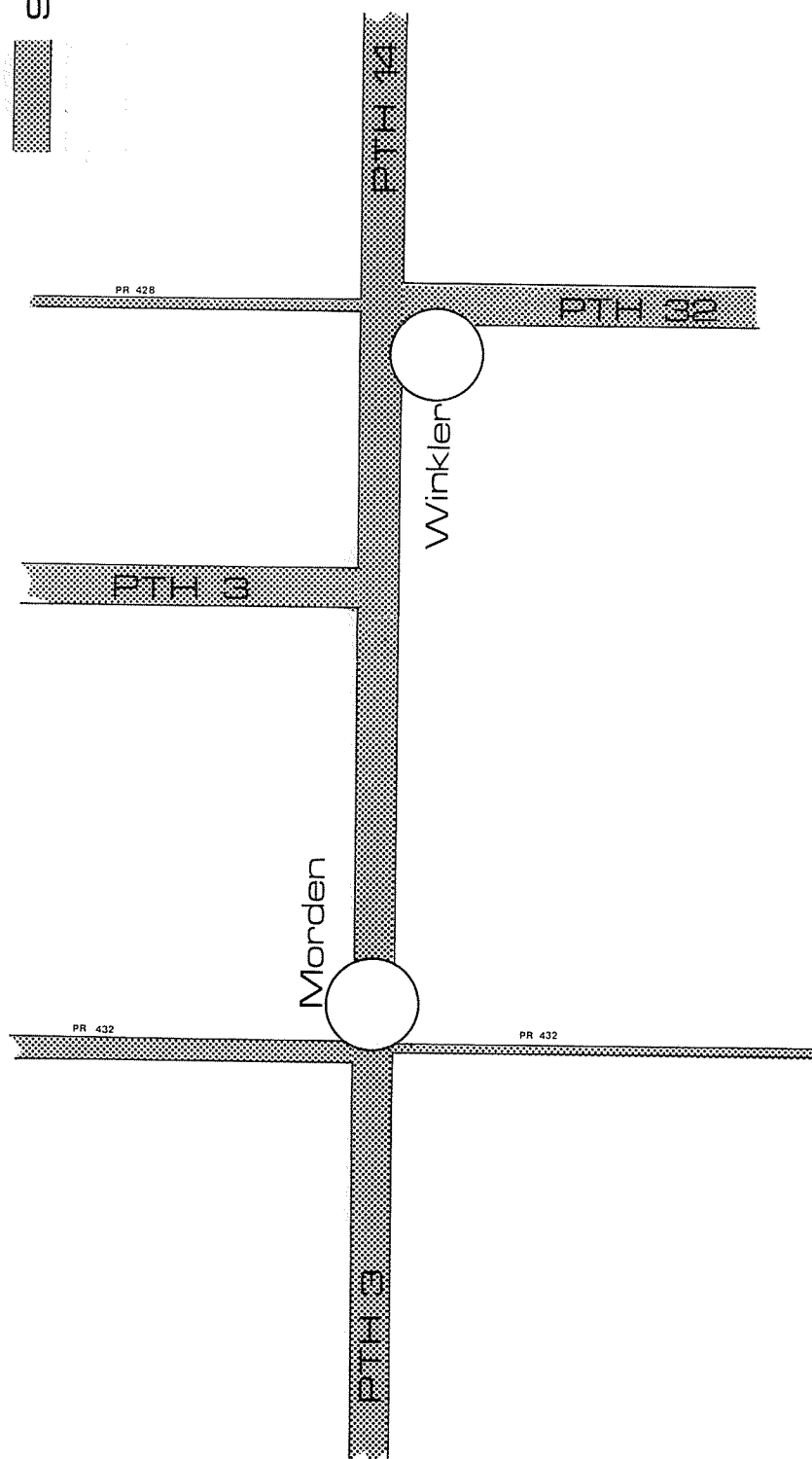
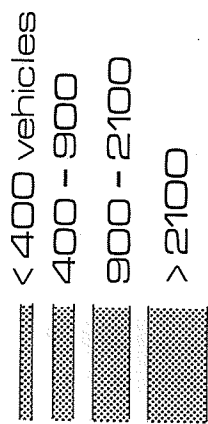


Figure 3

Road #432, north of Morden was exceptional, having more than 400 vehicles per day. The 1970 traffic counts on the same roads and highways show a striking change. (Figure 4). All traffic volumes have remained the same with the exception of the seven mile stretch of highway between Winkler and Morden. PTH #3 from Morden to where it meets PTH #14 to continue on to Winkler has shown an increase in traffic volume. The annual average daily traffic volume has increased from 900-2100 to over 2100 vehicles per day. This increase of traffic has probably been caused by the increased number of people from Winkler going to Morden and vice-versa. Although the traffic counts do not indicate the direction of traffic, it may safely be assumed that about 50% of the total volume travels in either direction.¹⁹ The increase in the volume of traffic generated between the two communities during the last four years indicates a growing mutual dependence. It is important to note that synonymous with the increased traffic flow between Morden and Winkler has been the establishment of commercial activities along the highway which joins them.

¹⁹This was confirmed by Mr. Angus MacLoad, Department of Highways, Government of Manitoba.

TRAFFIC VOLUME 1970 (AADT)



73

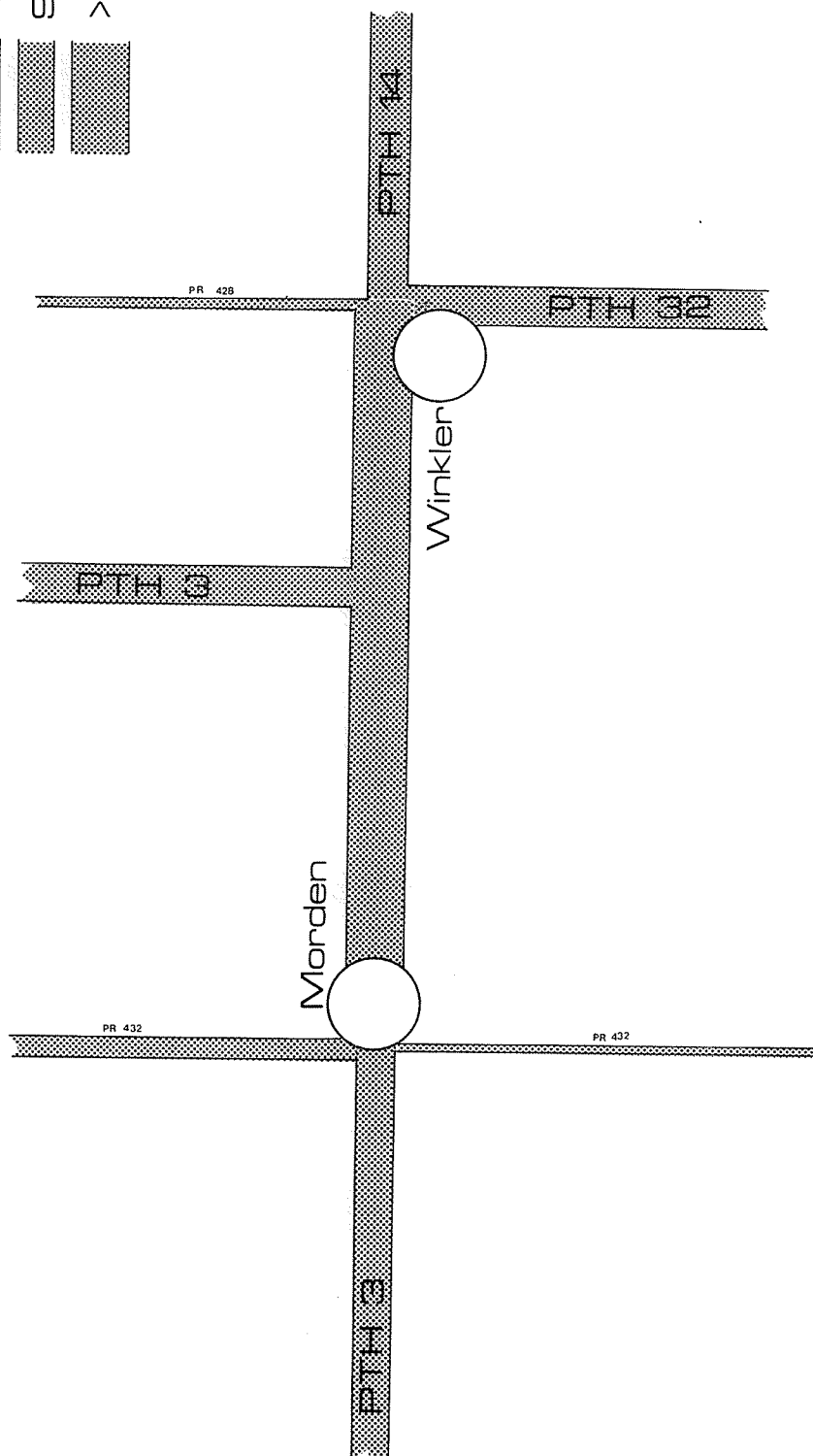


Figure 4

Comparative Analysis

A comparative analysis of the character and role of each community may help to clarify the nature of the interaction that exists between the towns of Morden and Winkler.

a) Industrial Activity

In terms of industrial activity, Morden and Winkler are similar, yet at the same time very different. Morden has six industries related to agriculture. Pembina Poultry Packers Ltd. produces dressed packaged poultry. The Morden Creamery is primarily engaged in the production of butter and other dairy products. J. B. Riediger and Sons are active in the production of feed and seed cleaning; Standard Gas and Engine Works and J. B. Agro-Industries Ltd. are engaged in the manufacture of agricultural equipment. Morden also has a flax fiber mill located just west of the town which conducts research on the processing of flax. Morden also has a cannery which processes canned corn, peas, and beans.

Other industries not agriculturally based have also established themselves in Morden. Quality Communication Co. Ltd. has recently started the manufacture of electrical components. Aluminum products such as window frames and doors are produced by Fehr's

Aluminum Sash and Door. Pembina Mountain Clays Ltd. processes the local bentonite deposits. Two printing firms are also located in the community.

The economy of Winkler is also based on agro-industries. A recent surge in industrial growth has increased the number of industries to total 10. The Winkler Co-op Creamery is a fully integrated plant, producing butter, cheese, milk, ice cream and it also operated the egg grading station. Nu-Steel Industry engages in the commercial production of grain bins. Schmidt Mfg. Co. produces steel truck grain boxes, hydraulic truck hoists and soil samplers. Kroeker Seeds Ltd. is active in seed cleaning, potatowashing and warehousing. The feed mill is also expanding to meet the demands for feed by the recent establishment of large commercial farms near Winkler.

Winkler's industrial base has also managed to diversify. The Triple E. Mfg.Co. opened its operation of travel trailer manufacturing in 1966. Triple E. Caravan Ltd. has begun the production of motor homes. Dutch Mobile Homes began operations in 1968. The building of sectional homes has also started in Winkler.

Industries associated with mobile trailer manufacturing have

been attracted to Winkler. Berdich Mfg. Co. produces aluminum doors, windows and accessories for mobile homes and trailers. Pembina Mfg. Ltd. constructs the steel frames for mobile homes and trailers as well as steel truck potato boxes. Tri-Star Industries Ltd. specializes in the production of battery operated golf carts and fiberglass canoes. Winkler also has a garment factory and two ready-mix concrete plants.

Morden and Winkler are agro-industry based. Due to the initiative of the local business community both centres have managed to diversify their industrial activities. The similarity in the broad industrial character is contrasted by the specialization occurring in each. Morden's major agro-industries are concerned with the processing of agricultural produce, whereas Winkler's agro-industries are primarily concerned with the manufacture of agricultural equipment. The diversified industries of each town are also non-competitive in nature. Winkler's interests have turned to the production of travel trailers, canoes and other recreational equipment. Morden on the other hand has recently developed industries connected with communications equipment.

Comparing the industrial activity of Morden and Winkler in terms of site convenience, Winkler has the advantage of the planned

industrial park where associated industries may locate. Morden has no industrial park and industries are found scattered throughout the community, making the attraction of associated industries more difficult.

b) Commercial Activity

The concentration of commercial activity in Winkler is found along Main Street from South Railway Ave. to Stanley Avenue with a small scatter of establishments elsewhere within the community. The development of a commercial strip is also evident along PTH #14. Most of these businesses cater to through-traffic. Winkler has 27 retail outlets and 15 service outlets. Two large department stores serve as main attraction nodes for the CBD. (For a list of all businesses and professional services see Appendix 1).

The main concentration of commercial activity in Morden is found along Stephen Street from 2nd St. to 10th St. Commercial strip development has also recently occurred along PTH #3 which runs in an east-west direction through town. Morden has 47 retail outlets and 23 service outlets. Morden's commercial area is composed of many small businesses with no large department stores. (For a complete list of business and professional services see Appendix II).

The large department stores located in Winkler have an advantage over smaller businesses in terms of retail prices and variety of goods because of economy of scale. Many people come from Morden to shop in Winkler.

c) Public Services

More important to the welfare of the economic climate in Morden are the large number of government offices located there. Such activities include the Dominion Experimental Farm, The Court House, the Department of Agriculture, Extension Division, the Manitoba Telephone System, Manitoba Health and Social Welfare offices and Manpower Centre. The importance of public services in the community can be shown by a comparison of government employment figures between Morden and Winkler. One hundred and eighty-six persons are employed by all three levels of government in Morden, whereas the total in Winkler is only forty-two. (Table 7). The majority of Morden's civil servants are employed by federal and provincial departments.

In terms of institutional activities, Morden has one large senior citizens home located south of the railway tracks on 9th St. South. Churches in the town total eleven. These churches represent a variety of religious denominations including Anglican, Catholic,

United, Mennonite and Pentecostal. The schools in Morden have a combined student enrollment of 1,321. Morden has one high school and five elementary schools, including a special school for retarded children. The medical complex is located on the corner of 1st St. and Stephen St. containing a 75 bed hospital, dental and opticians offices.

Institutional activities in Winkler are represented by three schools (one large elementary school, one school for retarded children, a high school and vocational school complex). A 57 bed hospital, a clinic and mental hospital are also found in the community. Three homes for the elderly citizens have been constructed (two near downtown). Churches in Winkler total eight, seven Mennonite and one Lutheran.

TABLE 7

GOVERNMENT EMPLOYMENT - WINKLER AND MORDEN, 1971

	Federal	Provincial	Municipal	Total
Morden	91	76	19	186
Winkler	8	13	21	42

Source: Regional Analysis Program, Data Output Part 1A, p. 482.

d) Recreational Activities

Morden always had a good supply of recreational and entertainment facilities. The covered ice rink, billiard parlour and movie theatre are located in or near the commercial district. Morden has a large park with playground and picnic facilities. In winter, part of the park is converted into an open air ice skating area. A playground and an open winter rink also exists on the lot occupied by the court house. Morden has three licensed "pubs" with evening entertainment. The Legion Hall is available for banquets and dances. Outside the town limits, Morden has the PFRA reservoir which is used for swimming, boating and fishing. The lake has facilities for camping and picnicking. Just east of the lake is a beautifully landscaped 9 hole golf course. A drive-in theatre is also located two miles west along PTH #3. Morden has numerous good eating places and motel and hotel accomodations.

In contrast, recreational facilities have generally been lacking throughout most of Winkler's history. In the 40's, Winkler's recreational facilities consisted of one open air ice rink. The rink was gradually replaced by an enclosed structure which included a curling rink. As Winkler grew, awareness of the need for recreation increased. A theatre, bowling alley and billiard parlour were started. A park was also started in the northwest corner.

It included a small golf course, baseball diamonds and buildings for agricultural exhibitions and fairs.

During the 50's, the too frequent fires in Winkler demolished the combined bowling alley and billiard parlour. The theatre had also closed down and the golf course did not prove to be successful.

By the late 60's, recreational activity increased substantially. The trend has been toward the development of a recreational centre. The park was redeveloped and now has proper facilities for picnics and trailers. Construction of playground facilities and the planting of shade trees have been introduced. The new arena was built in the park. A heated swimming pool has also been located there. Baseball diamonds have been improved and their number increased. As a centennial project, Winkler built a 9 hole golf course just west of the town limits. A billiard parlour has recently been established in the downtown area.

Winkler has never been able to compete with the amenities offered in the Morden area for recreational development. The entertainment facilities in Morden have been attractive for people in the area. From informal interviews with several Morden hotel owners, it was estimated that on weekends, at least half of the clientel frequenting the licensed beverage rooms were from Winkler and surrounding areas.

As a general overview, it appears as if the functions of each community are essentially of a complimentary nature. Winkler may be seen as an active industrially developing community. The competitive retail activities have given Winkler the reputation of a good place for the purchase of most goods and services. Morden, on the other hand, is seen as dominant in recreation, entertainment, and as an important centre for government services and research. The functional difference between the two communities has had the effect of increasing communication between them. Certainly, the many essential government agencies and certain professional services locating in Morden has had the effect of imbalancing the degree of dependence in favour of Morden, but the interdependence is not totally in one direction.

Another indication of the complimentary nature existing between Winkler and Morden may be exemplified by the existing library facilities. Both towns share a common stock of reading material. There is an exchange of books and library material between the two branches of the library. The success of the Morden-Winkler Regional Library is another sign of the close relationship existing between the towns.

Indicative also of mutual dependence is the recent change in local newspaper distribution. It was announced that the two weekly newspapers published by Pembina Printing Limited will be merged into one regional publication, the Pembina Times. Formerly, the Morden Times provided news coverage for Morden and the surrounding communities which include Miami, Roland, Darlingford and Thornhill. The Pembina Triangle Progress served subscribers from Winkler, Plum Coulee and villages south of Winkler and the neighbouring rural districts. The newspaper, now published in two sections still retains the identity of the areas formerly served. Local advertisements now appear in one newspaper with a combined wider market. This move has been well accepted by the major advertisers, most of whom market their products and services on a regional basis. The reason for the merger is explained by the president and publisher of the paper:

"Modern transportation and communication have brought the people of the Pembina Valley closer together. There are many fields of common interest in the fields of education, culture, government services, health services and sports activities to name only a few."

Certainly, the residents and elected officials of Morden and Winkler are conscious of the close ties between them. The annual community

²⁰The Free Press, January 11, 1972.

reports prepared by local representatives for the Department of Industry and Commerce emphasize the dual relationship:

"Morden is the western half of the Morden-Winkler regional service centre which takes care of the needs of 15,000 people within an area of 850 square miles." ²¹

The Winkler community report expresses it in the following way"

"Winkler shares its role as a regional centre with the Town of Morden, seven miles west." ²²

Summary

It has been shown from service and shopping preferences of the trade area population that Winkler and Morden share a similar umland, especially for higher order goods and services. The similar trade area is a product of the complimentary functions that each community performs. The functional differences between Winkler and Morden have tied the two communities together. The two communities and their umland are linked to form one inter-dependent system.

²¹Department of Industry and Commerce, Community Report, Morden Data Sheet, July 1970.

²²Department of Industry and Commerce, Community Report, Winkler Data Sheet, May 1971.

PART II - THE POLICY PLAN

CHAPTER V

THE FUTURE STATE OF THE SYSTEM

Having established the existence of a system, a way must be found to anticipate the future state of the system in order to direct its development. The goal is to achieve through the process of planning, an improved economic and social environment benefiting both Morden and Winkler. By means of an accurate population projection of each community, the number, age and sex characteristics of the future population may be anticipated. From these population estimates and from present land use characteristics, the space needs of various activities within each community may be derived. The projected system to this point has not been given any direction towards its improvement, but rather treated as a natural extension of past and present conditions. Implicit in the projections of the economic and social requirements of each community are the factors which have brought about their interdependence.

Taking full account of the nature of the interdependence between Morden and Winkler, the future state of each community may be enhanced through the conscious process of allocating particular economic and

social activities within each community by defining the most suitable areas for placement of certain activities, and by establishing the specific type of activity that each community should promote. It should be stressed that a generalized procedure of analysis characteristic of preliminary planning studies will be used, leaving the more detailed analysis for comprehensive plans.

Population Projection

As indicated in Chapter II, there exists a strong inter-dependence between economic activities and population, as well as general welfare activities. Since land use may be considered as representative of economic and social activities, an accurate population projection is needed from which to derive future economic and social space requirements. In consideration of the theory related to projection, the cohort-survival method of population projection is probably the most desirable. It is a flexible method and can be adapted in a great variety of ways to suit the data available while at the same time retaining its underlying logic. It is a method which allows births, deaths and migration to be handled separately. It gives results for any pattern of age groups and can handle male and female elements separately or together.²³

²³ William I. Goodman and Eric C. Freund, (ed), Principles and Practice of Urban Planning, International City Managers' Association, Washington, D. C., 1968, pp. 61-65.

The general form of the cohort-survival method is as follows. Males and females by single-year age groups are tabulated separately, the figures being the latest available. Next the net migration change for the first year is allowed for by the addition or subtraction of the assumed change for each age group of males and females. Then the appropriate age-specific birth rates are applied successively to each group of women in the child bearing range (15-49). The resultant births are divided into males and females, adjusted for mortality in the first year and entered in the next column, first row of males and female tables. Finally, age-specific mortality or survival rates are applied to each age group of males and females to estimate the number who will survive to the next year. This sequence is repeated until the projection date is reached. It should be noted that the researcher has complete control over the projection at all times and can introduce special adjustments in births, deaths and migratory changes at any point in the process.

A simplification of this method is to work with five year age groups (0-4, 5-9, etc.) and to project by five year periods. Slightly different data is needed; eg. five year fertility ratios and the pattern of migration assumed must be expressed in five year periods. While reducing the accuracy and the degree of control over the method,

the gains may outweigh the losses when considering the data available and the fewer mechanical tabulations necessary.

The whole basis of the cohort-survival method of population projection is dependent upon the credibility of projected birth, death and migration rates. Death rates are relatively stable and have long-run trends which can be predicted with reasonable accuracy. Much more difficult is the question of birth rates which are hard to predict since they are dependent on many factors which themselves are subject to rapid change. Contraception practices, attitudes towards the age of marriages, and preferences concerning the size of a family may affect the birth rate. The best approach is to follow the general principle of examining past trends in birth rates and extrapolating them into the future, taking into account high and low estimates.

Migration estimates perhaps present the most difficult problem. In a province like Manitoba, internal migration is likely to form a major element of total population change. The problem is further compounded by a serious lack of information about migration. However, information about migration can be inferred by the comparison of natural changes with total changes. A possible way to determine net migration rates is to start at a later date and by using the appropriate birth and death rates, to "age" that population by the cohort-survival method up to the present.

A comparison, age group by age group, male and female, of the resulting figures with the actual figures will yield an approximation to the profile of the migration element.

Having approximated a past migration profile, assumptions concerning the size and timing of the future migratory changes must still be made. Many factors affect migration, principally, economic opportunities, social characteristics, qualities of environment and local or regional climates. It is probable that economic opportunity is the single largest element to consider. Therefore, it follows that assumptions about migration cannot be dissociated from the question of future job opportunities of the local economy. (Appendix III contains an explanation of the projected birth, death and net migration estimates used in the cohort-survival method of population projection for Winkler and Morden.)

Based upon established trends in birth, deaths and migration rates the future population of each community was predicted. Table 8 indicates the resultant age-sex structure of Winkler as expected in the year 1976. The distribution of population in terms of age groups is expected to remain much the same as in 1971. In terms of total population, Winkler is expected to increase by 800 people to 3,928 in 1976. In 1981, the population of Winkler is expected to be 4,920, about

TABLE 8

WINKLER POPULATION PROJECTION 1971-76

Age Group	Female Pop. 1971	Migration Rate 1971-75	Fertility Rate 1971-75	Live Births	Survival Rate	Survivors	Female Death Rate 1971-75	Female Pop. 1976	Male Pop. 1971	Migration Rate 1971-75	Male Death Rate 1971-75	Male Pop. 1976
0-4	172	+ .400					.0017	121	143	+ .430	.0045	124
5-9	166	+ .431					.0012	241	140	+ .200	.0018	203
10-14	164	+ .299					.0012	238	160	+ .344	.0020	168
15-19	156	+ .333	.2195			121F	.0016	263	141	+ .014	.0059	215
20-24	115	- .161	.8071				.0021	208	129	+ .217	.0096	160
25-29	93	- .031	.8625				.0026	96	88	+ .205	.0078	155
30-34	84	+ .200	.4763	269 x .9100 = 245			.0028	90	82	+ .464	.0079	105
35-39	65	- .058	.2301				.0059	101	72	+ .309	.0097	119
40-44	68	- .029	.0712				.0073	61	62	+ .016	.0135	93
45-49	85	+ .200	.0070			124M	.0134	66	69	+ .150	.0245	62
50-54	67	+ .063					.0234	101	63	+ .167	.0370	77
55-59	83	+ .339					.0301	69	67	+ .288	.0625	71
60-64	79	+ .200					.0501	108	54	+ .200	.0905	81
65-69	73	+ .200					.0793	90	69	+ .643	.1639	59
70+	179	+ .200					.4016	210	133	+ .330	.5515	173
Total	1652							2063	1472			1865

1,000 more people than the 1976 estimate and about 1,800 more than the present population. (Table 9).

The projected pattern of age-sex distribution in 1976 of the population of Morden also remains basically the same as in 1971. The 1976 projected population of Morden is estimated at about 3,593 , an increase of about 300 people from the 1971 figure. (Table 10). Morden's population is expected to increase by about 700 people from the present figure of 3,294 to 4,013 in 1981. (Table 11).

It was stated that population estimates serve as an index of growth. (See Chapter II). However, they do not fully express the economic and social character of the community; these are, rather, expressed by the use of land in that community. In order to determine the future state of the communities in question, the present space devoted to specific activities and their distribution must be projected into the future by the application of the growth index.

Land Use Survey

A land use survey was carried out in both communities, whereby the space in use was recorded and classified. Because of the great variations which exist among land uses, it was necessary to classify and record land uses into general groupings of the categories in pursuit

TABLE 9

WINKLER POPULATION PROJECTION 1976-81

Age Group	Female Pop. 1976	Migration Rate 1976-80	Fertility Rate 1976-80	Live Births	Survival Rate	Survivors	Female Death Rate 1976-80	Female Pop. 1981	Male Pop. 1976	Migration Rate 1976-80	Male Death Rate 1976-80	Male Pop. 1981
0-4	121	+ .400		169			.0013	178	124	+ .300	.0037	173
5-9	241	+ .450		349			.0010	169	203	+ .200	.0012	160
10-14	238	+ .350		321			.0010	349	168	+ .300	.0015	244
15-19	263	+ .350	.1989	355		178F	.0011	321	215	+ .100	.0051	218
20-24	208	- .080	.7913	191			.0014	355	160	+ .200	.0081	236
25-29	96	- .015	.8471	95			.0018	191	155	+ .250	.0069	190
30-34	90	+ .250	.4550	113	380 x .9300 = 353		.0020	95	105	+ .250	.0073	193
35-39	101	+ .025	.2109	104			.0050	113	119	+ .300	.0087	130
40-44	61	+ .015	.0675	62			.0060	103	93	+ .100	.0117	154
45-49	66	+ .250	.0064	83		173M	.0125	62	62	+ .200	.0228	101
50-54	101	+ .150		116			.0224	82	77	+ .200	.0354	72
55-59	69	+ .400		97			.0290	90	71	+ .300	.0575	89
60-64	108	+ .250		135			.0483	94	81	+ .250	.0870	87
65-69	90	+ .250		113			.0769	128	59	+ .450	.1538	92
70+	210	+ .250		263			.3954	263	173	+ .400	.5230	188
Total	2063							2593	1865			2327

TABLE 10

MORDEN POPULATION PROJECTION 1971-76

Age Group	Female Pop. 1971	Migration Rate 1971-75	Fertility Rate 1971-75	Live Births	Survival Rate	Survivors	Female Death Rate 1971-75	Female Pop. 1976	Male Pop. 1971	Migration Rate 1971-75	Male Death Rate 1971-75	Male Pop. 1976
0-4	108	-.036					.0017	124	131	+.120	.0045	127
5-9	139	-.120					.0012	104	158	+.075	.0018	146
10-14	147	+.028					.0012	124	169	+.056	.0020	160
15-19	158	-.013	.2195			124F	.0016	151	146	-.014	.0059	178
20-24	117	-.278	.8071				.0021	156	93	-.147	.0096	143
25-29	99	-.066	.8625				.0026	84	98	-.058	.0078	78
30-34	83	+.122	.4763				.0028	92	77	+.055	.0079	92
35-39	79	+.082	.2301				.0059	94	71	-.014	.0097	80
40-44	62	-.195	.0712				.0073	86	82	+.108	.0135	69
45-49	108	+.421	.0070			127M	.0134	48	78	+.069	.0245	90
50-54	76	-.146					.0234	195	75	+.087	.0370	81
55-59	107	+.259					.0301	63	62	-.088	.0625	78
60-64	95	+.250					.0501	134	90	+.343	.0905	53
65-69	99	+.356					.0793	120	80	+.385	.1639	110
70+	230	+.386					.4016	335	177	+.321	.5515	198
Total	1707							1910	1587			1683

TABLE 11
MORDEN POPULATION PROJECTION 1976-81

Age Group	Female Pop. 1976	Migration Rate 1976 - 80	Fertility Rate 1976-80	Live Births	Survival Rate	Survivors	Female Death Rate 1976-80	Female Pop. 1981	Male Pop. 1976	Migration Rate 1976-80	Male Death Rate 1976-80	Male Pop. 1981
0-4	124	+ .100		136			.0013	134	127	+ .120	142 .0037	131
5-9	104	+ .100		114			.0010	136	146	+ .150	168 .0012	141
10-14	124	+ .090		135			.0010	114	160	+ .150	184 .0015	168
15-19	151	- .008	.1989	150			.0011	135	178	- .097	177 .0051	184
20-24	156	- .141	.7913	134		134F	.0014	150	143	- .079	132 .0081	176
25-29	84	- .030	.8471	81			.0018	134	78	+ .050	82 .0069	131
30-34	92	+ .250	.4550	115			.0020	81	92	+ .200	110 .0073	81
35-39	94	+ .150	.2109	108		266	.0050	115	80	+ .059	85 .0087	109
40-44	86	+ .100	.0675	95			.0060	107	69	+ .250	86 .0117	84
45-49	48	+ .450	.0064	70		132M	.0125	94	90	+ .200	108 .0228	85
50-54	195	+ .100		215			.0224	69	81	+ .200	97 .0354	106
55-59	63	+ .300		82			.0290	210	78	+ .200	94 .0575	94
60-64	134	+ .250		168			.0483	80	53	+ .400	74 .0870	89
65-69	120	+ .250		150			.0769	160	110	+ .400	154 .1538	68
70+	335	+ .250		419			.3954	391	198	+ .350	267 .5230	257
Total	1910							2110	1683			1903

of the generalized nature of analytical procedures to be employed. The assembled information was summarized in the form of land use maps showing their distribution, and a statistical summary indicating the space devoted to each use.

Seven classes of land use were distinguished for the purposes of this study. They were: residential, commercial, industrial, public, recreational, vacant and agricultural. The land use categories were defined as follows:

- The residential land use category was defined to include single family and multiple family lots.
- The commercial land use category included all retail service, finance, insurance and real estate activities.
- The industrial land use category was defined as containing all manufacturing, assembly and processing activities as well as warehousing.
- Public land uses were considered to be government services such as courts, post offices, etc. as well as schools, churches, hospitals and similar institutions.
- The recreational land use category grouped private and public activities such as theatres, billiard parlours and parks, playgrounds and golf courses.

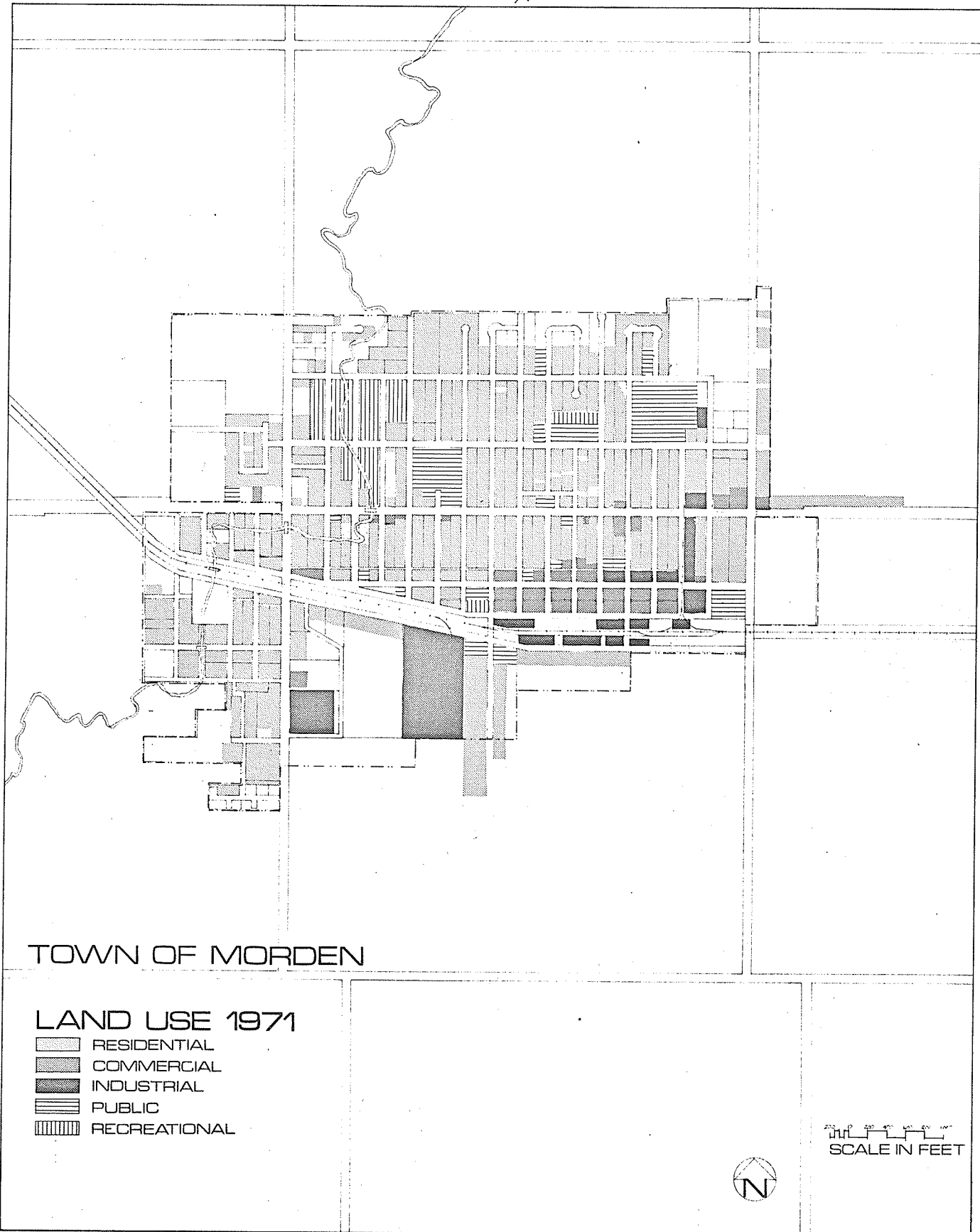
- Vacant land consisted of all lands which were presently unused within the town limits, irrespective of associated structures.
- Agricultural land was classified as being that land which is seasonally cultivated, seeded and harvested for crops, including summer fallow.

Map 23 represents a generalized distribution of land use in Morden. Map 24 indicates the general arrangement of land use in Winkler. The importance of the distribution of land use will become more apparent when the suitability of locating activities in certain areas within each community is considered.

The statistical summary of land use was expressed in terms of the amount of acres devoted to each category of use. (Table 12). A more detailed breakdown of acreages is presented in the statistical summary for analysis at a later stage. The statistical summary and the population estimated form the basis for the estimation of future space requirements.

Space Requirements

From the population projection the land area to accomodate growth in both communities in 1981 was established. Once these



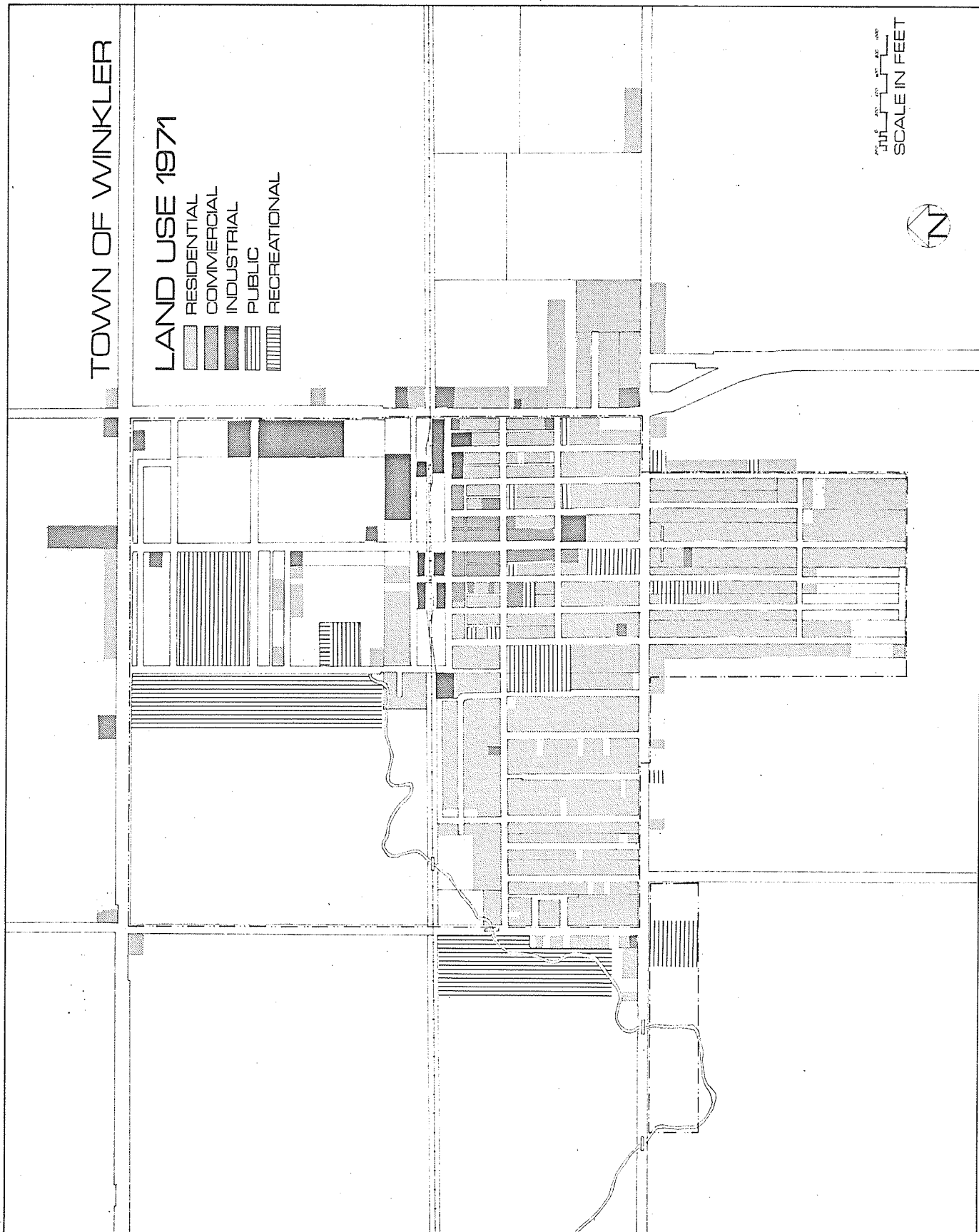


TABLE 12
 LAND USE - MORDEN AND WINKLER, 1971 (Gross Acres)

	Morden	Winkler
Residential	338	276
Commercial	26	22
Industrial	59	28
Public	64	60.5
a) Schools	30	39
b) Other	34	21.5
Recreation	153.2	71
Parks	27.2	9
Vacant ^a	143.3	158
Agricultural ^a	128.3	143

^a Note that vacant and agricultural acreages record only that land so classified within the legal boundary of each community. The other categories take into consideration the larger built-up area of each town.

estimates are available, it is possible to redistribute space requirements between the two communities and eventually arrive at a conceptual plan which reflects an improved balance in land utilization that will benefit both communities.

a) Industrial Space Requirements

The most common measure for estimating the demand for industrial space is some variant of the employment density ratio because in most instances, the number of employees can be conveniently estimated for a community.²⁴ These industrial densities provide a measure of intensity of development in an urban area, and serve as a standard for future estimates.

Industrial density is defined as the number of industrial employees per gross industrially used acre. The term "gross" refers to all the land within the property lines of the industrial site, including building areas, landscaped grounds, parking and loading areas, outdoor storage and to half of the area of all streets, highways or railroad lines bordering the property.

Employing this procedure the intensity of industrial development can be derived for Winkler. First it is necessary to estimate industrial employment. In 1961, the total number of people

²⁴William N. Kinnard, Jr., and Stephen D. Messner, Industrial Real Estate, Society of Industrial Realtors of the National Association of Real Estate Boards, Washington, D.C., 1971, pp. 77-87.

employed in Winkler was 723. This represented a 42 per cent participation rate. (Table 13). Of the 723 people, 214 were employed in secondary industries, or 29.6 per cent of the total labour force. (See Table 2 on page 18). Given the length of the planning period, it will be assumed that the participation rate and percentage employed in industry will remain relatively the same in the future. At the same participation rate of 42 per cent, the total labour force at present is estimated at 1,312. If about 30 per cent of these are employed in industry, the number of people is 394. Expressed in "employees per gross acre" (Winkler has 28 gross acres of industrial land) the intensity of industrially used land is about 14 persons per acre.

The foregoing standard when applied to the appropriate estimated of future industrial employment will determine the amount of land required for new industry. Winkler is expected to have 4,920 people in 1981, of which 2,066 will comprise the total labour force. Industrial employment (30 per cent of total) is expected to be 620. At 14 employees per gross acre of industrial land the future space requirements will be about 45 gross acres, an addition of 17 acres to the present land used for industry.

Similarly, the future industrial space required by Morden was calculated. Morden's total labour force in 1961 was 956 or 49.2 per cent of the total population (Table 13). Of this total, 290 or 30.3 per cent were employed in industry (Table 4). Employing the same participation rate and the same percentage employed in industry, the 1971 industrial employment is estimated to be 491. Given the present 59 acres of industrial land, the number of industrial employees per gross acre is calculated at 8.3 .

Applying this standard to the estimated industrial employment in 1981 will indicate the future industrial space needs. Of the 4,013 people expected to live in Morden in 1981, 1,974 will constitute the total labour force. Of these, 598 will be engaged in industry. At an intensity of 8.3 employees per gross acre, total future industrial space is expected to be 72 gross acres, an increase of 13 gross acres of industrial land.

To make allowances for replacement of existing industrial plants in character with move patterns and contemporary trends toward the spread out, one-storey type of development, was not seen as necessary, especially in these communities where intensive use of space is not as important a factor as it might be in large metropolitan areas.

The resulting estimates of industrial space requirements for Winkler and Morden are, however, insufficient to cover the contingency of very large installations which may desire to locate in the area. To cover such an eventuality and at the same time to give some recognition of the importance of protecting prime industrial sites in anticipation of needs beyond the 10 year period, additional areas will be designated as "industrial reserves".

c) Commercial Space Requirements

It is not practical to include in a conceptual land use planning analysis the detailed kind of investigation of commercial space requirements.²⁵ Moreover, for the generalized results desired, this level of detail is not warranted, particularly when it is considered that the space required by commercial activities is nominal in comparison with that for other land use categories.

²⁵For the fully detailed analysis of space needs undertaken in comprehensive studies, a whole array of specialized investigations of retail, service, office and other commercial functions is required. Usually the existing space usage is delineated by square feet of floor area and a multiplier (trade area population or retail sales index) is used to estimate future space requirements. Some of these more detailed studies are: R. E. Murphy, J. E. Vance, Jr., "Delimiting the CBD", Economic Geography, July 1954, pp. 209-210; B. M. Rotoff, "The CBD and Its Umland", PLAN, Vol. 10, No. 2, 1969.

An approximate procedure was employed in estimating space requirements of commercial business areas. These estimates were made on the basis of the total population. Using the local standard of commercial space per 1,000 population served, an estimate of the total commercial space required by each community was developed.

Morden presently holds 26 gross acres of commercial land, about 7.89 acres per 1,000 population. Applying this standard to the 1981 population estimate, the expected commercial acreage will be 32 gross acres, an increase of 6 acres from the 1971 figures.

The commercial space requirements for Winkler were derived by the same procedure. With 22.6 gross acres of commercial land, a ratio of 6.88 acres per 1,000 population was derived. The estimated acreage needed for commercial use in 1981 was about 34 acres, an increase of 12 acres over the 22 acres in 1971.

The provision of off-street parking space must also be considered. In both Winkler and Morden, parking facilities at peak shopping periods are extremely inadequate. The expansion of on-street parking is impossible and at best limited. Future off-street parking space will have to be taken into consideration. At present a minority of parking space is devoted to lots. The few lots existing are small and usually

only accommodate a small percentage of the total need. Since parking space is presently under-stocked, a parking ratio of 2:1 will be assigned to additional commercial space. That is, for every additional acre of commercial land expected in the future, 2 acres will be added for parking facilities.

d) Residential Space Requirements

The residential use areas are the largest users of space. The key unit of measure employed is the family. The population data, being the index of growth, is translated into family units, which in turn can be expressed in terms of dwelling units and through the medium of residential densities, dwelling units are ultimately converted to acreage equivalents, the end product desired in this analysis. In keeping with the generalized results desired, it should be noted that the analysis is approximate where subjective estimates and assumptions are introduced in the procedure.

It is characteristic of rural communities for each family to live in a single detached home. Non-family residents usually comprise a small portion of the total population, many living as boarders in family homes, apartments or hotels. It will be assumed that each family unit represents one dwelling unit. Adjustments for losses in the current stock of dwelling units was not deemed necessary since

losses by fire and demolition usually only represent a handful each year and losses by way of major construction projects and renewal projects are rare. Vacancy rates in rural communities are also usually low.

Important to the analysis are assumptions concerning family size. On the basis of trends in the change in average family size, assumptions must be made as to the average family size by the end of the planning period. These assumptions are presumed to reflect changes arising out of net population increases. Tables 14 and 15 provide the necessary estimates of family size and number of families expected in the future in each community.

As estimated from Table 15, Morden now has 862 families or the equivalent number of dwelling units. Given the total number of gross residential acres (338), the density is 2.6 dwelling units per acre. The estimated number of dwelling units in Morden at the end of the planning period will be 1,082 (See Table 15). At a density of 2.6 dwelling units per gross acre of residential land the total amount of space expected to be devoted for residential land use in 1981 will be 416 acres, an increase of 78 acres.

The number of families or dwelling units estimated to be in

TABLE 13

PARTICIPATION RATE - WINKLER AND MORDEN, 1961

	Population 15 and over	Total Labour Force	Participation Rate (%)
MORDEN	1,922	956	49.2
WINKLER	1,720	723	42.0

Source: Regional Analysis Program, Output Data Part 1A, p. 303.

TABLE 14

ESTIMATE OF FAMILY SIZE AND NO. OF FAMILIES - WINKLER

Total Pop.	Total No. of Pop. in Families	Per cent of Total Pop.	Average Family Size	Total No. Families
1961 2529	2173	86	3.8	571
1966 2570	2166	84	3.6	604
1971 ^a 3124	2624	84	3.4	772
1981 4920	4133	84	3.4	1216

TABLE 15

ESTIMATE OF FAMILY SIZE AND NO. OF FAMILIES - MORDEN

Total Pop.	Total No. of Pop. in Families	Per cent of Total Pop.	Average Family Size	Total No. Families
1961 2793	2429	87	3.6	673
1966 3097	2744	89	3.5	777
1971 ^a 3294	2932	89	3.4	862
1981 4013	3572	89	3.3	1082

^aEstimates from past data available,

Winkler is 772. From the statistical summary of land use, it was determined that 276 gross acres comprises the amount of residential land presently found in Winkler's urbanized area. (Table 12). The density of dwelling units per gross residential acre is 2.8 . In the year 1981, Winkler is expected to have 1,216 dwelling units. Expressed in density, the total amount of space required for residential use will be 434 gross acres, an increase of 158 acres over the next ten years.

e) Space for Recreation

The trend in western society toward a more advanced technology and a wider use of automation has served to focus more attention on leisure-time needs. While it is beyond the scope of this discussion to go into these trends, there is no doubt that one result of changes in leisure-time patterns is a greater demand for open spaces to accommodate recreation needs.

Recreation uses encompass a variety of facilities with different location needs. At one extreme are the urban based spectator sports involving ball parks and other facilities for regularly scheduled sports events and occasional exhibitions. Also found in the urban areas are the parks and entertainment facilities such as billiard parlors, theatres, etc. At the other extreme are large public reservations in the outlying reaches of the community that are developed for picnicing, boating,

swimming and other forms of activities for family excursions and organized group outings. Also in this category are public and private golf courses, fairgrounds and other large space users. These are usually located at the edge of built up areas.

These recreational facilities are usually classified according to whether they are active or passive. For active recreation facilities, space requirements are developed on the basis of two criteria; a population yardstick to indicate the total acreage required and a minimum site-size criterion. A population standard was also used as a general guide in estimating space requirements for passive recreation areas. Since recreation areas are often already integrated into the urban area, such yardsticks are often simply a means of checking space allotments already made to ensure that the area measures up to minimum standards.

In light of the empirical standard in Table 16, the adequacy of recreation facilities for Winkler and Morden may be determined. In terms of golf courses both towns have a 9 hole golf course. As a standard of 1 hole per 3,000 persons, the golf facilities presently available will be adequate for the next 10 years.

Morden has, within its town limits, 27.2 acres of park and playground area. Adopting the standard of 1,000 or 800 population

per acre, it is obvious that Morden has reserved adequate park and playground space for the future. At present, Morden has no specific area devoted to playfields or exhibitions, but is making efficient use of the high school ground facilities for this purpose.

The regionally oriented recreation area at the nearby PFRA dam site covers an area of approximately 150 acres. Some problems do exist with overcrowding at the camping sites and a hazardly high number of water craft on the lake, but with properly enforced restrictions on the number of camp sites and the number of boats allowed, these problems may be overcome. Within the ten year planning period, efficient and extensive use will be made of the lake facilities. It is, however, essential that additional land suitable for outdoor recreation activities be reserved and developed adjacent to the present lake area, as the need arises.

In terms of private entertainment facilities, Morden has several movie theatres, a billiard parlour and numerous licensed premises with entertainment. The economic success of these private ventures will affect the future establishment of similar activities.

Applying the recreation standards to Winkler, it has been concluded that all facilities are adequate for the length of the planning

period and in some instances superior to the minimum standards. The park area covering 9 acres meets the minimum requirement as set out in Table 16.

Winkler does not have the natural amenities of well treed areas or a lake as does Morden, and as such, the recreational development has been directed toward a recreational centre consisting of numerous ball fields, an arena, swimming pool and tennis courts. This recreational complex has ample room for expansion.

The private entertainment facilities in Winkler are not as numerous as in Morden, mainly because of strong religious conviction, and as such the present lack of such facilities are compensated for by the availability of such facilities in Morden.

TABLE 16

GENERAL ESTIMATING STANDARDS OF RECREATION AREAS

Facility of Area	Population Standard	Site-Size Standard
Playground	1 acre/800 pop.	5-10 acres
Local Park	1 acre/1000 pop.	2 or more acres
Recreation Centre or Playfield	1 acre/800 pop.	10-30 acres
Major Park	1 park/400,000 pop.	100 acre park
Public Golf Course	1 hole/3000 pop.	150 acre/18 hole

Source: Adapted from Stuart Chapin Jr., Urban Land Use Planning, University of Illinois Press, Urbana, 1965, pp. 420 and 449.

f) Space Needs for Public Service Facilities

Public services, although assembled here as a group, are often widely distributed in a spatial sense. They are grouped simply because the derivation of total space requirements needs first an area-wide perspective. When distributed and eventually dimensioned into the plan, many of them become part of other assemblages; the CBD, residential areas and so on. For the most part, space requirements for these facilities should be determined on the basis of studies of the individual needs of each facility and the site size dictated by these needs. For the the level of detail employed here, approximate estimates of space needs are made by comparison to the expected urban population.

g) School Space Requirements

The 1971 age-sex distribution of Morden indicates 917 persons within the school age cohorts (5-19). This urban school population requires 30 acres of land for educational purposes.²⁶ From the 1981 population projection the number of school age children is expected to be 878, a slight decrease. Because of the continuing

²⁶

It should be noted that the total school population also includes children who are bused in from the rural area. Although rural school children comprise a significant proportion of the school population, it is expected that the rural segment of the school population will decrease because of the general trend of rural area depopulation.

trends in declining birth rates, fewer school age children are expected to be present. With the advent of higher in-migration, the number of school age children could conceivably increase. Within the next ten years, however, the school population is not expected to exceed the present number. Assuming that present school space is adequate, it is not expected that additional acreage devoted to school use will be required by 1981.

The number of school age persons in Winkler is about the same as that of Morden, being 927. A similar amount of land is also devoted to school use. (39.0 acres). The school population is expected to be 1,461 in 1981 as derived from the population projection. This increase is mainly due to the higher in-migration rates projected for Winkler as opposed to that of Morden. The additional school population will require the addition of an elementary school. The present site of the high school and vocational school is sufficiently large enough to accommodate some expansion if necessary. The minimum acreage required for an elementary school is about 5 acres.²⁷

²⁷ The minimum acreage was deemed sufficient in this case since the proposed elementary school would be located near available park area and within a low density residential development, where lots are adequately large to serve as play areas for children.

h) Other Public Facilities

Space requirements for churches are usually omitted at this generalized stage of planning, these needs being more appropriately considered in a detailed plan study.

Central post offices, provincial and federal services and headquarters for various public utilities require access to the general public and are therefore included in the CBD estimates.

i) Miscellaneous Land Uses

Such facilities as railway yards, garbage and refuse disposal areas, cemeteries, waterworks, sewage disposal areas, medical centres and airports should be handled as special uses. Space requirements for these facilities should be determined on the basis of special studies of the individual needs of each facility. Many of these facilities locate well away from the built up areas of the communities, with room for expansion. Given the period of time under consideration it will be assumed that space requirements for these facilities will remain the same, or if expanded, will not interfere with the potential areas of development in or around the two communities in question.

Summary

The urban land use space requirements by 1981 for each

community may be summarized as indicated in Table 17. The greatest user of space will be the residential land use category. Increases will also have to be accommodated in commercial activities and industrial development. In terms of most recreational and public services, present space will be sufficient, given the length of the planning period.

TABLE 17
 LAND USE - MORDEN AND WINKLER, 1981 (Gross Acres)

	Morden	Increase	Winkler	Increase
Residential	416	78	434	158
Commercial	32	6	34	12
Industrial	72	13	45	17
Public	64	0	65.5	5
a) School	30		44	
b) Other	34		21.5	
Recreation	153.2	0	71	0
Park	27.2	0	9	0

CHAPTER VI

LAND USE SUITABILITY

The purpose of this chapter is to examine the suitability of areas for development in Morden and Winkler. Involving a range of physical, economic and social considerations, land use suitabilities are derived from the basic interaction needs of residents, firms and institutions within the urban area. In a general sense, these requirements relate to health, safety, convenience, economy and the general amenities of urban living. They involve the consideration of danger of floods and of health and safety hazards, the nearness or remoteness of one use from the other, their compatability and the social implications of these uses to the people of the community, the feasibility of developing particular locations, and the liveability and general attractiveness as factors of location.

General principles relating to the location of land use may be grouped into three major functional areas in the community; the work areas, the living areas and the leisure-time areas. The areas of work are those parts of the community devoted to manufacturing, trade

and services. The living areas are viewed as the residential areas and their accessory facilities such as play grounds and elementary schools, etc. Leisure-time areas are generally considered to include cultural and recreational facilities, consisting of dance halls, libraries, parks and similar facilities.

Principles relating to these three areas may be generally viewed in the following way. Work areas should be located in convenient proximity to living areas and to other work areas as well. They should be interconnected by proper throughfares to insure easy access and egress. Some work areas should be located near heavy transportation facilities. The areas designated for work areas should provide adequate sized sites, economic to develop and be properly situated for the particular uses intended. Living areas should be located in convenient proximity to the work and leisure-time areas where there are nearby transportation routes to insure easy access back and forth. They should include open spaces and be within easy walking distance of community facilities. They should be located in areas away from heavy traffic and incompatible uses. Leisure-time areas should be located so as to be conveniently accessible to living areas. Parks and open spaces should be located so as to take advantage of natural features of the landscape.

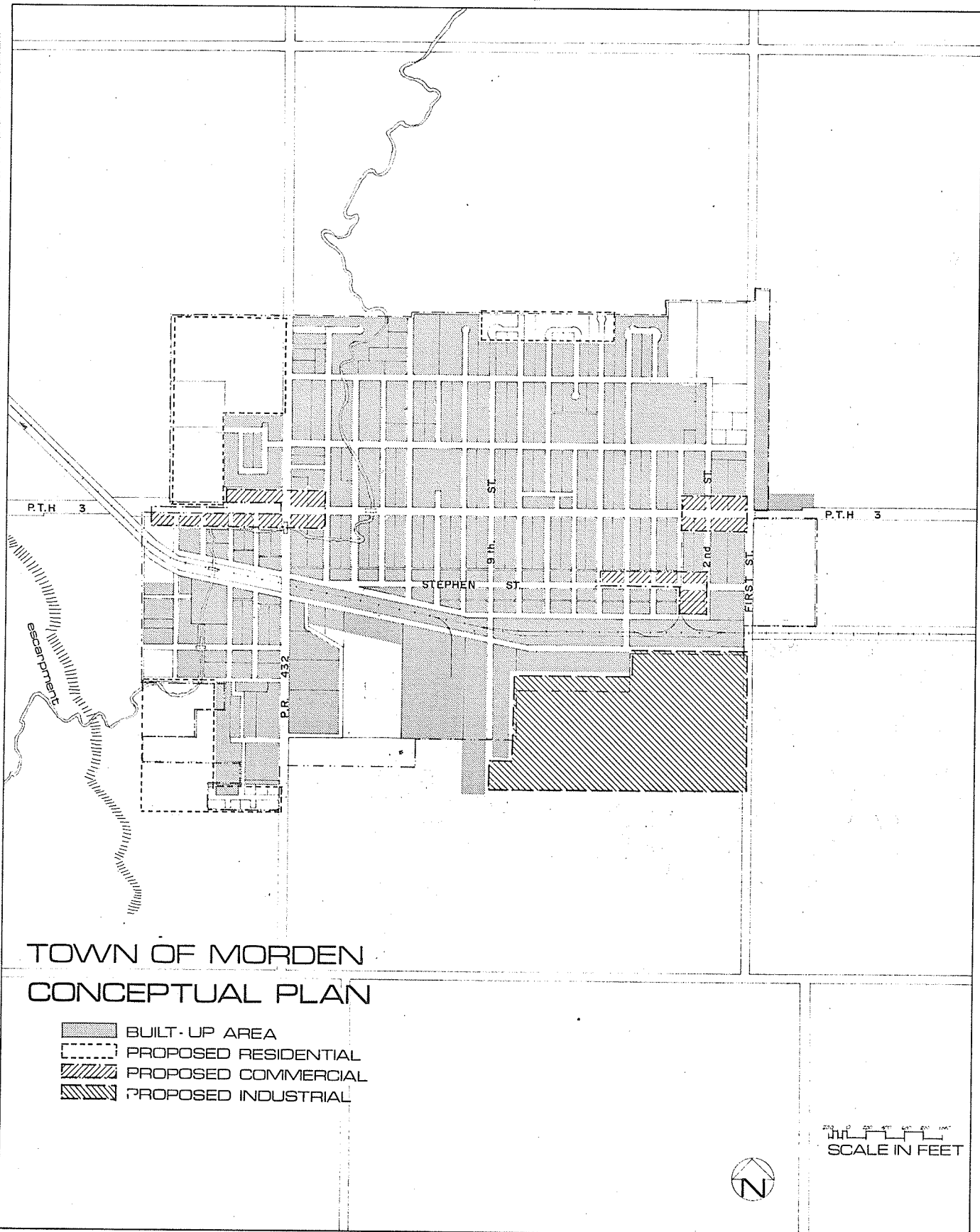
Work Areas

Industrial areas require reasonably level land, preferably with not more than 5 per cent slope. The location of industrial areas must accomodate a range of site sizes for extensive and intensive industrial activities. Large open sites must be available for the modern one-storey buildings and storage areas in the fringe area of the community. Sites must be provided close-in with a variety of site sizes to accomodate smaller and more intensive industries. Industrial sites should have good access to major truck routes and to railway facilities. Utilities such as power, water and waste disposal facilities should be available at or near the site. The industrial area should be compatable with the surrounding area. Consideration should be given to prevailing winds and existing development of adjoining land uses.

Industrial locations in Morden are found scattered throughout the community. Some industries are located adjacent to the rail line. Some are found along Stephen Street, near the CBD, while others are found in the outlying areas. Given the nature of industrial location in Morden, more orderly development would occur with the establishment of an industrial park. Considering the prevailing winds, the area south and east of existing urban development would be appropriate for industrial

development. The space east of the town limits is, however, occupied by the research facilities of the Dominion Experimental Farm. Therefore, only the open agricultural land south of Morden is available for industrial expansion. The developed area south of the main rail line is presently composed of industrial and warehousing activities with some residential units. A home for the elderly citizens is also found in the area. Most of the homes are older, with exceptionally few new homes having been constructed. The land is level and well drained. Accessibility to the area is adequate for industrial development by way of First Street or Provincial Road #432 to PTH #3. Utilities such as power and water can conveniently be installed and the waste disposal lagoons are situated one-half mile to the south. The area designated as industrial will be sufficient to accomodate the expected industrial expansion within the next ten years and reserve for industrial expansion beyond the planning period. (Map 25).

Most of Winkler's industrial development has occurred along the railway yards and in the newly established industrial park to the northeast. The industrial park is ideally located in consideration of accessibility to road and rail transport, to proximity of associated utilities and prevailing winds. It is estimated that the present land available in the industrial park is adequate for the accomodation of the








projected 17 gross acres needed by 1981. In addition the land designated as proposed industrial should be held in reserve for possible future expansion beyond the projected ten year period. (Map 26). These sites are well located with respect to compatability with surrounding land uses, availability of utilities and accessibility.

Commercial business areas are to be located central to their tributary trade area and adjoining heavy traffic flows. The Central Business District should be located where retail, professional, financial and related services can be conveniently accommodated and made accessible to adequate parking. Required also is the development of highway oriented services. These should be located on major highway approaches to the urban areas where sites are adequate for drive-in services and motel accommodations. Consideration in locating highway oriented services must also include safety, aesthetic appearance and general compatability with adjoining uses.

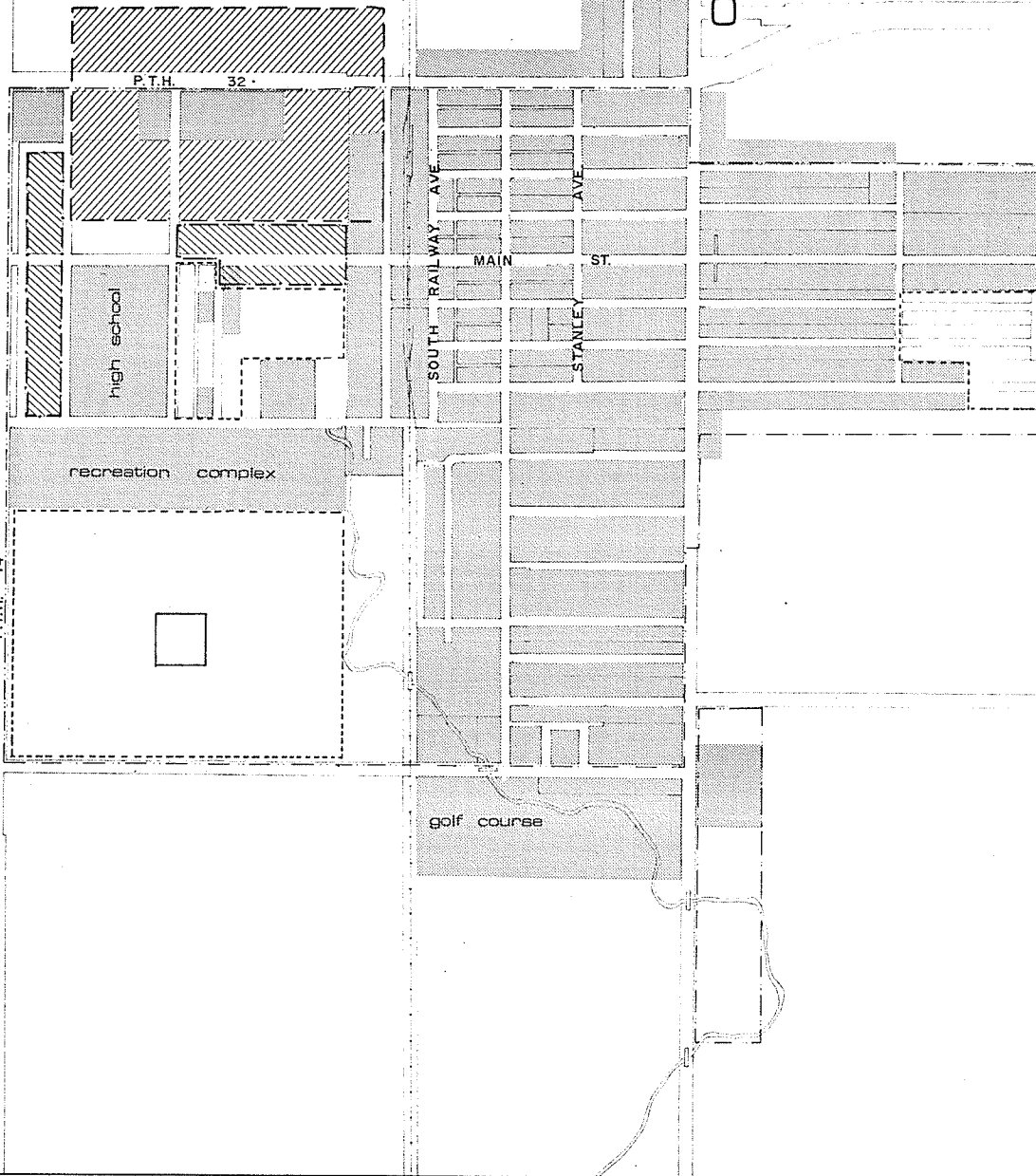
The Central Business District in Morden is found along Stephen St. from Second St. to Ninth St. Some highway services are found approaching the community from the east and west on PTH #3. It is anticipated that the existing industrial activities adjacent to the CBD will eventually relocate, thereby releasing valuable land for new

TOWN OF WINKLER

CONCEPTUAL PLAN

-  BUILT-UP AREA
-  PROPOSED RESIDENTIAL
-  PROPOSED SCHOOL
-  PROPOSED COMMERCIAL
-  PROPOSED INDUSTRIAL

SCALE IN FEET



commercial activities. The approaches to the community from either direction on PTH #3 should develop the desired highway oriented activities (Map 25). It is suggested that highway oriented activities be made accessible by frontage roads to separate through traffic from business traffic for purposes of safety.

The main commercial area of Winkler is located along Main Street between South Railway Avenue and Stanley Avenue. Some commercial development has also occurred along PTH #14. Main Street has been opened and extended to meet PTH #14. It is anticipated that future commercial development will occur along the new extension, serving as a buffer between the industrial park to the east and residential development to the west. Future highway commercial activity may be accommodated along PTH #14 between PTH #32 and Main Street with additional commercial development reserved further west. (Map 26). The potential hazards caused by commercial activities adjacent to major highways may be lessened by the construction of frontage roads made accessible to the commercial uses.

Living Areas

Residential areas should be located on well drained land. Terrain may include a variety of slopes and hillside sites, depending

on the topographic characteristics in the urban area. Slopes over 15 per cent should be avoided due to difficulties accruing with servicing and installation of essential utilities. Residential areas should be in close proximity to major thoroughfares. Major streets should bound but not penetrate residential areas. Associated facilities such as schools should be adequately large for buildings and recreational facilities. Play grounds and park areas should be reasonably level sites, usually in conjunction with schools and within easy walking distance of the people served. Many areas not suited for any kind of urban activity such as creek areas and other natural features may be converted to park land.

Residential land, requiring well drained sites, would be most suited on the escarpment slope in Morden. In addition to providing a well drained site, the aesthetic qualities of the view from the slope would be an asset not commonly found in the prairie region. Residential development to the north and west would also be compatible with adjoining areas and well removed from industrial areas. (Map 25). The northwest corner of Morden's built-up area is also accessible to the park and the natural amenities provided by the creek.

The general direction of residential development in Winkler has been to the west and south. Growth to the west has been hampered by the location of the golf course just west of the town limits. Possible

residential expansion can occur to the south or to the north where land is available within the town limits. Because of the new recreational, school and industrial development in the northern part of town, it would be advantageous to also promote residential development. The northwest quarter section of land west of the park and recreational complex is favourable for residential development when considering the standards set out above. It is an area bounded by major traffic routes, near recreation and school facilities and well removed from incompatible uses. (Map 26). It is proposed that the new additional elementary school be centrally located within the new residential area.

Time Distance and Performance Standards

In dealing with the suitable location of uses, time and distance criteria are primary units for the measure of convenience. They are usually expressed in terms of minutes or miles of travel. Time and distance relationships between the residential and various community facilities are usually represented by these standards. Table 18 serves to illustrate the form in which these standards are expressed for general land use analysis. A test of these standards on the arrangement of community activities has found that all movements or travel times within and between Morden and Winkler are inside the generally accepted limits.

The time distance standards between both communities are such that the two communities may be viewed as if they were one large urban centre. The only exception regarding time distance standards within Morden and Winkler is the standard applied to elementary schools where the physical distance is limited to the distance that young children are allowed to walk to school.

Another form of location standard used in general land use analysis is performance standards. These standards provide criteria for testing the degree of hazard or nuisance from land use activities which create smoke, dust, noise, odor, vibration, or fumes or from activities generating traffic or producing wastes. They have usually been applied to industrial and related activities. Performance standards are based on tests to determine whether a particular industry meets the established minimum standards set out. Performance standards are as yet plagued with the problem of enforcement, but it must be recognized that with the advent of popular acceptance, they will be used in the future as general location criteria in land use planning analysis.

Summary

The proposed arrangement of land uses in the communities of Morden and Winkler have been based on general suitability of location.

Prevailing winds, drainage, slope, compatability with surrounding uses, availability of sites and accessibility were important in determining the new work and living areas in each community. Time-distance factors of location suitability were found to be well inside the generally accepted limits, within and between the two communities in most cases.

The proposed land use locations indicated no detail relating to street and lot patterns, reserving these for a detailed planning study. However, the results are significant for indicating the direction that future development could take.

TABLE 18
ILLUSTRATED TIME-DISTANCE STANDARDS
FOR SELECTED USES IN URBAN AREAS

Use of Facility	Controlling Standard
Employment Centre	20-30 minutes
Central Business District	30-45 minutes
Local Shopping Centre	One-half mile or 10 minutes
Elementary School	One-half mile
Junior High School	One mile or 20 minutes
Senior High School	20-30 minutes
Playground and Local Park	One-half mile or 10 minutes
Playfield and Recreation Centre	One mile or 20 minutes
Public Park or Reservation	30-60 minutes

Adapted from F. Stuart Chapin Jr., Land Use Planning, University of Illinois Press, Urbana, 1965, p. 377.

CHAPTER VII

POLICIES FOR THE FUTURE

Based on the evidence that Morden and Winkler are mutually dependent, as shown by the complementary nature of activities within each community and the shared umland that these centres serve, as exemplified by the service and shopping preferences of the trade area population, the future state of each community was determined. With the aid of population projections applied to present land use characteristics, the space requirements of existing activities were projected. From the general standards of location suitability, the space needs of each service centre were so arranged as to enhance the environment within which people live.

To ignore the existence of a system would lead to a deterioration of the economic and social make-up of both communities. In order to assure the continued growth and well being of both towns, as they interrelate with each other and with the surrounding umland, the specific type of development desired must be planned for.

Industrial Development

The industrial development of each community should be so

promoted as to not compete with the industrial development of the other. Winkler should attempt to establish industries which are complementary with the recent growth of industries related to travel trailers, mobile homes and sectional home manufacturing. The location of complementary industries within a planned industrial park has the advantage of reducing costs of production by eliminating transportation costs. Such assembly industries are usually labour intensive and may take advantage of the inexpensive labour force. Winkler should continue to specialize in the manufacture of agricultural and recreational equipment so as not to compete with the type of agricultural industries present in Morden.

Morden, on the other hand, is better suited for the development of agro-industries. Industries related to the processing of agricultural products, if locating in Morden have the advantage of benefiting from the existing research facilities of the Morden Experimental Farm and the research facilities of private industry. It should be the policy of the Morden community to look to food processing industries as a means of expanding its industrial base. The labour market in Morden is also relatively large and inexpensive to the industrialist and as such labour intensive industries should be promoted, different from the labour intensive industries in Winkler. Morden should promote

industries which are not competitive with industries in Winkler, for example the continuation of industries related to the assembly of communications equipment.

Commercial Development

The development of business activities in both communities should follow the present trend. Because Winkler already has developed a competitive retail atmosphere, it should take advantage of this and develop as a shopping centre for groceries, furniture, clothing and appliances, especially related goods and services of the higher order.

Morden has a less developed commercial district related to the above mentioned goods and services, but the day to day needs of its population should not be ignored. The existence of many government agencies already in Morden makes it an ideal location for additional government agencies which may have the advantage of increasing the convenience of conducting governmental business by the people in the region. Morden has superior recreational facilities to that of Winkler, with the lake development and the natural amenities offered by the escarpment. It is suggested that Morden concentrate on development of motels and other vehicle oriented facilities to take advantage of the

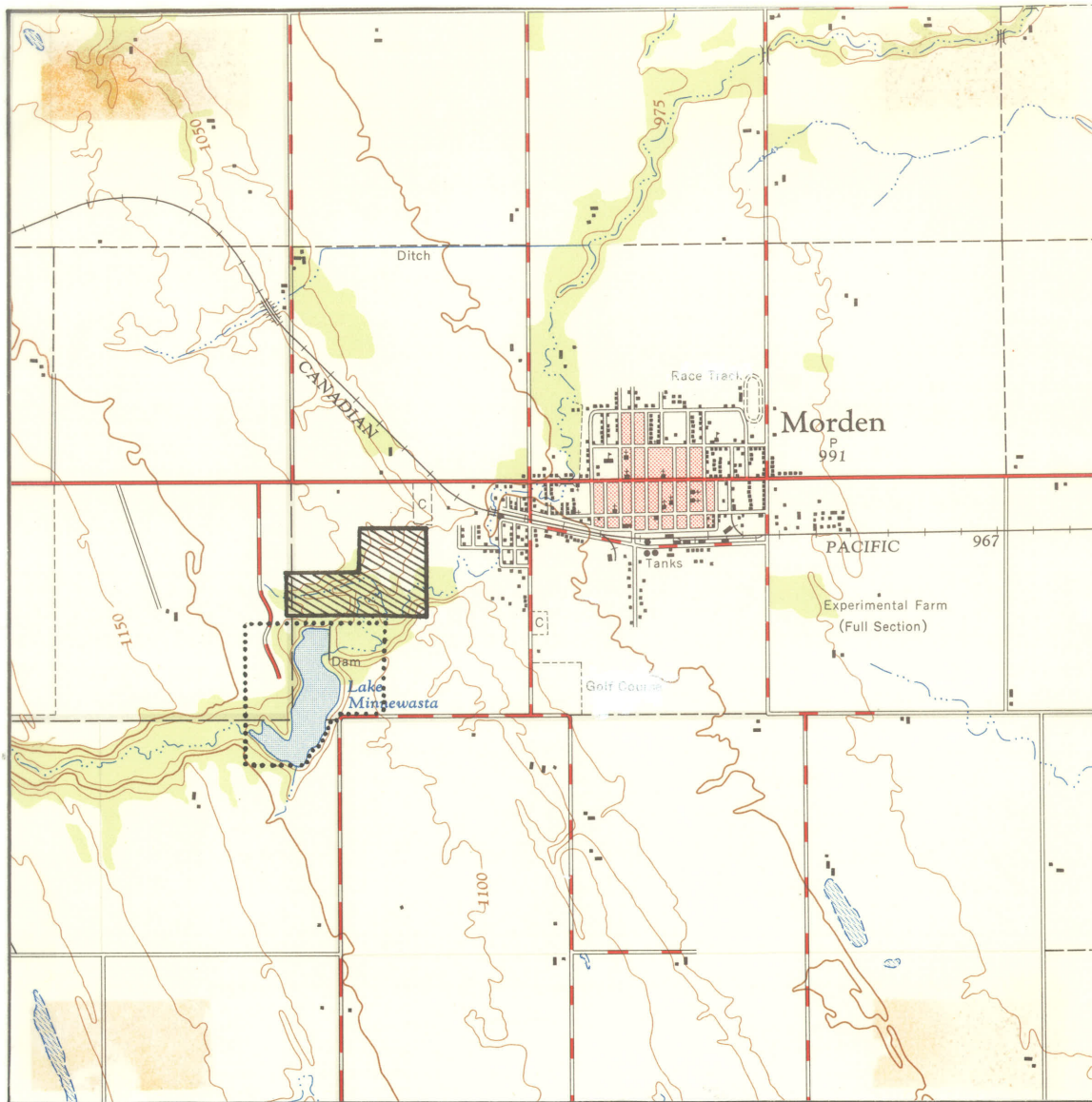
tourist trade. Highway commercial activities should be developed by both communities and such development should be directed toward the establishment of a commercial corridor between the two towns.

Educational Development

In terms of education facilities, it is suggested that both communities continue to serve their individual population. Winkler has a combined vocational and high school. Should the industrial activities develop as suggested, Winkler would serve as an ideal location for the establishment of a technical college on the present high school site. Courses related to industrial plant operations and management training could take advantage of the existing industries to serve as a practical training ground, at the same time benefiting the industries involved by improving their own operations and employing students.

Recreational Development

It is recommended that Morden promote tourism and out door passive recreation. The existing entertainment facilities could be expanded to attract distant vacationers and the regional population. The area north of the present lake and recreational complex should be held in reserve for future recreational development. (Map 27) The



MORDEN AREA

-  existing recreation
 proposed recreation



scale : one mile to
one inch

Source: Surveys and Mapping Branch, Department of Mines
and Technical Surveys, 1958.

Map 27

natural terrain and slopes of the area are ideal for various winter and summer activities.

Winkler may develop its recreational facilities in a somewhat different nature, taking advantage of the large recreational centre that it has already developed. Whereas Morden would attract leisure-time night entertainment and passive recreation activities, the town of Winkler could successfully specialize in competitive sport activities. To the new rink, numerous baseball diamonds and tennis courts could be added a complex for holding large track meets.

Implementation

To realize the desired direction of development will require the full cooperation of the people living in both communities. It is essential that the decision-makers of both communities understand the nature of their coexistence. They must be willing to consciously and cooperatively implement the desired direction of development.

The present administrative structure is as follows. Manitoba is divided for purposes of municipal government into cities, towns, villages, rural municipalities and local government districts. The basic unit in the organized part of Manitoba is the rural municipality, out of which have been carved autonomous towns and villages. Each

municipality and incorporated community is governed by an elected council and mayor(reeve). Municipal councils receive their powers from statutes set out by the provincial government. The council may delegate to committees the power to examine any question, manage any business or execute a specific duty so long as the council retains final control over the decisions of committees.

In light of the cross jurisdictional nature of the planning proposal, it would be mandatory that a planning commission be set up consisting of representatives from each community and the rural municipality involved. It would be the duty of this joint planning commission to study and make specific recommendations to all three councils concerning the development of the Morden-Winkler system.

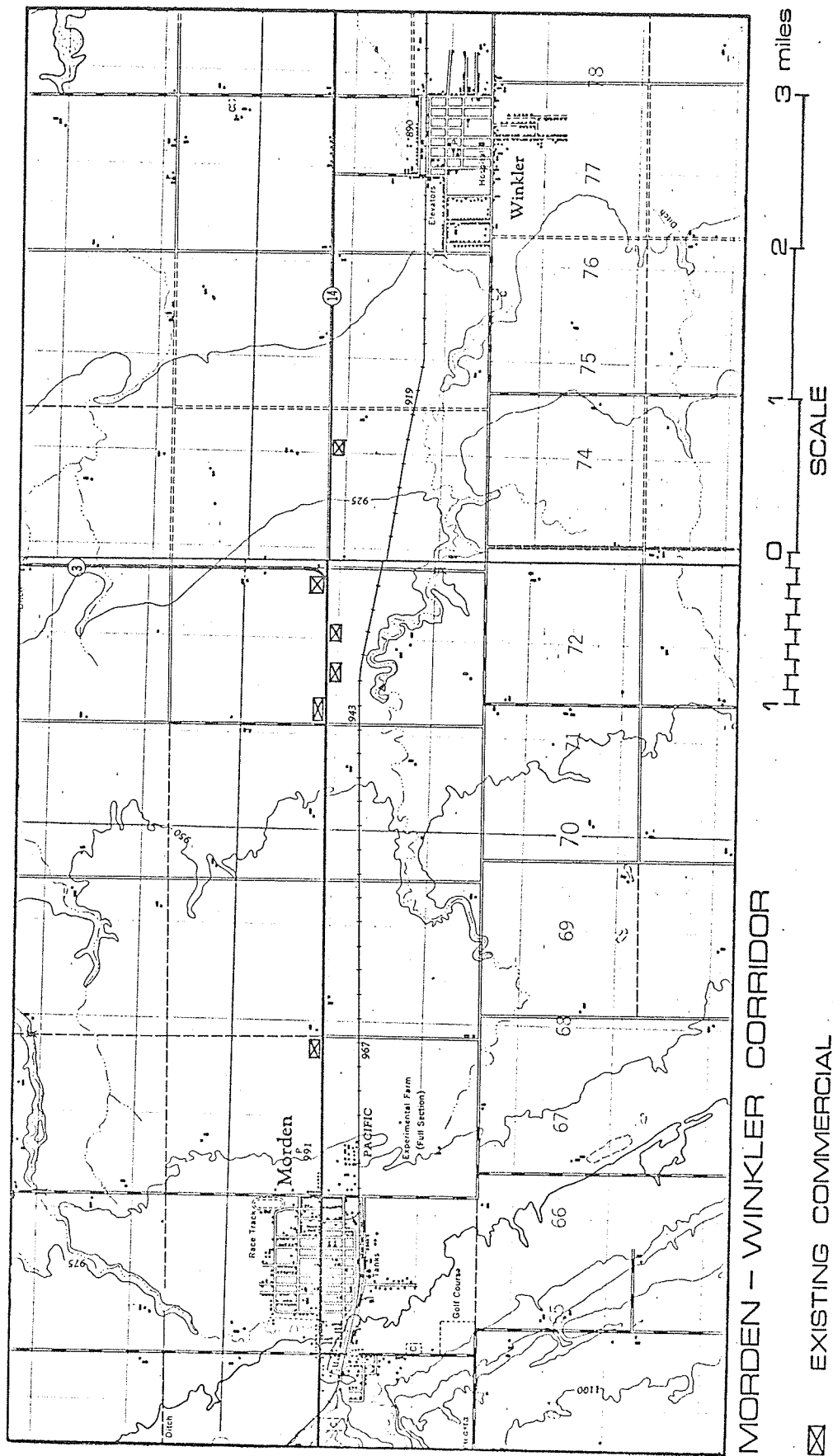
The Future of the Morden-Winkler System

Assuming that the towns of Morden and Winkler and the Rural Municipality of Stanley merge their planning programs, what will the area be like in 1981? The population projections show that each community will have a population of over 4,000. The age-sex structure in each community will be about the same as it is today, with a larger proportion of its population in the older and younger age groups and fewer people in the middle range age groups. The communities will

still be service centres, having expanded their commercial activities as well as their industrial base, but each community will be more specialized in function. Winkler will become prominent in attracting people from the surrounding rural areas and from Morden for their higher order goods and services such as clothing, furniture, appliances and groceries. Morden will maintain a retail business catering to the day to day needs of its population, but activity in the Morden downtown area will be intense with the expansion and addition of decentralized government functions, as well as the recreation and entertainment functions.

The commercial activity between Morden and Winkler has increased in recent years with the establishment of several implement dealers, a service station and feed storage complex (Map 28). The development of similar and related highway commercial activities will most likely continue. Rather than allowing haphazard highway development between the two towns, this trend may be turned to advantage for both communities through controlled development. Highway commercial activities should be promoted by both communities as a start to a possible future commercial corridor linking the two urban nodes.

Winkler's industrial base will expand to include assembly and manufacturing establishments in line with agricultural and



MORDEN - WINKLER CORRIDOR

EXISTING COMMERCIAL

recreational equipment. Morden will be the centre for agricultural research, establishing food processing industries which take advantage of new processing techniques. Given the sizable labour force, assembly industries will be attracted to the community.

The recreational facilities at Morden will attract vacationers from a wide area and the community will prosper from this increased tourist activity. Winkler will develop as a centre for competitive sports activities and will host major exhibitions. Winkler will be the centre for industrial and technical education and training.

As the smaller communities within the area of influence of Morden and Winkler decline, more of the rural population will become dependent upon the specialized services found within the towns. Increased specialization on the part of each community will draw clientel from a wider area having the affect of increasing their area of dominance. In addition to strengthening the bond with the surrounding country side, the interaction between Winkler and Morden wil also intensify, perhaps to such an extent as to warrant the construction of a major four lane highway between them. The system as was initially defined will be larger in areal extent and the interaction between the rural and urban components of that system will be more intense.

CONCLUSION

It was the hypothesis of this thesis that the communities of Morden and Winkler were so interrelated as to form a system. From the analysis of sample questionnaires conducted by the Regional Analysis Program, pertaining to the mobility patterns of the rural population for certain goods and services, it was possible to delimit the area of influence of each community. The questionnaire results showed that, especially for higher order goods and services, both Morden and Winkler share a similar umland, suggesting that the two communities were functionally different and therefore interdependent. The analysis of similar information in the urban centres only indicated a small degree of interdependence between Morden and Winkler in terms of shopping preferences of the urban population. However, from an examination of the type of activities stationed in each community and by means of comparative traffic counts on the transportation link between Morden and Winkler it was found that many functions within the two communities were complementary in nature and that a significant amount of interaction did occur between the two service centres.

Based upon the premise that the two communities were mutually interdependent and served a similar umland, the future development

of one community could not be carried out without considering the effects on the other. The Morden-Winkler system was projected to 1981. The cohort-survival method of population projection provided a detailed account of the expected character of the future population. Using approximate methods of analysis, the comparison of present space uses to population gave the expected space needs for various activities for the length of the planning period. Increases in land use were calculated for industrial, commercial, residential, public and recreational activities with the biggest increase of space being residential and the least increase of space being for recreational activities. Employing general principles of location suitability, the expected space needs were located within each community.

On the basis of these findings, policy proposals were established with the objective being to enhance the economic and social environment of the Morden-Winkler system. It was proposed that the development of both communities be such as to increase the complementary nature of their function. As well, the development between the two communities should be planned with the purpose of further strengthening the existing system. In order to successfully implement these policy proposals, a joint planning commission should be established by the authorities concerned. The proposals of this thesis do not define a concrete

plan of development, but rather suggest that a interrelated system does exist which must be dealt with in a more comprehensive manner so as to take advantage of the positive aspects of the system for the greater benefit of all concerned and hopefully to avoid the problems which might arise from the uncontrolled development of two closely related service centres.

APPENDICES

APPENDIX I

BUSINESS & PROFESSIONAL SERVICES - WINKLER

Services	No. of Establishments
<u>Apparel & Accessories Group</u>	
Children's Wear.	1
Family Clothing Stores	2
Jewellery Stores	2
Ladies' Wear	1
Men's Wear, Shoe Stores, Tailors are with others	
<u>Automotive Group</u>	
Body Repair Shops	2
Buld Oil Dealers	4
Implement Dealers	4
Motor Vehicle Dealers	2
Service Stations.	5
<u>Building Materials and Hardware Group</u>	
Building Contractors	3
Hardwares	3
Lumber Yards.	3
<u>General Merchandise Group</u>	
Catalogue Sales Offices.	2
Department Stores	2
General Stores	2

Appendix I cont...

Services	No. of Establishments
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Food & Beverage Group

Bakeries	1
Eating Places	5
Grocery Stores	2
Supermarkets	1

Furniture Appliances & Radio Group

Electrical Appliances	1
Furniture Stores	2
T.V. and Radio Repairs	3

Professional

Accountants (part time)	1
Chiropractors	1
Lawyers (part time)	2
Medical Doctors	5
Optometrists (part time)	1

Other Groups

Banks	1
Barber Shops	3
Beauty Parlours	2
Billiard Parlours	1
Coin Laundries	2
Drug Stores	2
Dry Cleaners	1
Egg Grading Station	1
Electrical Contractors	1
Funeral Parlours	1
Grain Elevators	3
Hatcheries	1
Insurance and Real Estate	3
Machine Shops	2
Photographers	1
Plumbing and Heating	3

Appendix I cont...

Services	No. of Establishments
Printers.	1
Shoe Repairs	2
Music Shops.	2
Remant Shops.	1

Source: Department of Industry and Commerce, Community Reports,
Winkler Data Sheet, May, 1971.

APPENDIX II

BUSINESS & PROFESSIONAL SERVICES - MORDEN

Services	No. of Establishments
<u>Apparel & Accessories Group</u>	
Children's Wear.	1
Family Clothing Stores	4
Jewellery Stores	1
Ladies Wear.	2
Men's Wear.	2
Shoe Stores	1
Tailors	2
Remant Shop.	1
<u>Automotive Group</u>	
Body Repair Shop.	1
Buld Oil Dealers	5
Implement Dealers	3
Motor Vehicle Deaters	5
Service Stations.	4
<u>Building Materials & Hardware Group</u>	
Building Contractors	6
Hardwares.	4
Lumber Yards.	5
Woodworking	3
<u>General Merchandise Group</u>	
Catalogue Sales Offices.	2
General Stores	2

Appendix II cont...

Services	No. of Establishments
<u>Food & Beverage Group</u>	
Bakeries	2
Eating Places.	7
Eating Places with Beverage.	3
Grocery Stores.	4
Liquor Commission	1
Meat Markets	1
Supermarkets	2
<u>Professional</u>	
Accountants	1
Chiropractors	1
Dentists	2
Lawyers	5
Medical Doctors	5
Optometrists.	1
Veterinarians	2
Dental Technicians.	1
<u>Other Groups</u>	
Banks	2
Barber Shops.	2
Beauty Parlours	3
Billiard Parlours	1
Coin Laundry	1
Drug Stores	2
Dry Cleaners	1
Egg Grading Station	1
Electrical Contractors.	2
Florists	1
Funeral Parlours	2
Grain Elevators	3
Insurance and Real Estate.	10
Machine Shops	4
Painters and Decorators.	2

Appendix II cont...

Services	No. of Establishments
Photographers.	1
Plumbing and Heating.	4
Printers.	2
Shoe Repairs.	1
Theatres.	2
Upholsteres.	2
Travel Agencies.	1
Auto Wreckers.	1
Cycle Shop.	1

Source: Department of Industry and Commerce, Community Reports,
Morden Data Sheet, 1970.

APPENDIX III

ESTIMATION OF BIRTH, DEATH AND NET MIGRATION RATES
FOR THE COHORT-SURVIVAL METHOD OF POPULATION PROJECTION

The cohort-survival method of population projection requires the estimation of the underlying population characteristics (births, deaths, net migration, etc.) The population of Winkler and Morden was projected by 5 year intervals to the year 1981, using five year cohorts. The population characteristics were expressed in five year periods.

Since no detailed migration figures were available for Morden and Winkler, it was necessary to approximate past net migration rates. Using the cohort-survival method, the 1966 population of each town was "aged" by the appropriate birth and death rates to the year 1971. The difference obtained between the "aged" population and the actual population was used as an estimate of the net migration having occurred between 1966 and 1971. Table 1 and Table 2 indicate the derivation of net migration estimates.

The 1971 migration rates for each town were then projected to 1976 and 1981. Because of the short time of the planning period, it was assumed that the net migration rates expressed by five year cohorts would not change substantially within the next five years.

TABLE 1

ESTIMATION OF MIGRATION RATES - MORDEN, 1966-71

Age Group	Female Pop. 1966	Fertility Rate 1966-70	Live Births	Survival Rate	Survivors	Female Death Rate 1966-70	Female Pop. 1971	Actual Female Pop. 1971	Net Migration Estimate	Male Pop. 1966	Male Death Rate 1966-70	Male Pop. 1971	Actual Male Pop. 1971	Net Migration Estimate
0-4	158					.0030	112	108	-.036	148	.0055	117	131	+.120
5-9	144					.0017	158	139	-.120	160	.0021	147	158	+.075
10-14	161					.0017	144	147	+.021	148	.0023	160	169	+.056
15-19	163	.2398			112F	.0020	161	158	-.019	110	.0066	148	146	-.014
20-24	107	.8220				.0026	163	117	-.282	105	.0100	109	93	-.147
25-29	75	.8757				.0034	107	99	-.075	74	.0080	104	98	-.058
30-34	74	.4887	255 x .8962 = 229			.0037	75	83	+.107	73	.0086	73	77	+.055
35-39	78	.2513				.0075	74	79	+.068	75	.0105	72	71	-.014
40-44	77	.0783				.0089	77	62	-.200	74	.0148	74	82	+.108
45-49	90	.0074			117M	.0141	76	108	+.421	71	.0259	73	78	+.069
50-54	89					.0229	89	76	-.146	71	.0405	69	75	+.087
55-59	81					.0336	87	107	+.230	72	.0643	68	62	-.088
60-64	81					.0530	78	95	+.218	72	.1005	67	90	+.343
65-69	87					.0816	77	99	+.286	70	.1666	65	80	+.385
70+	159					.4227	172	230	+.337	150	.5615	134	177	+.321
Total	1624						1707	1707		1473		1624	1624	

TABLE 2

ESTIMATION OF MIGRATION RATES - WINKLER, 1966-71

Age Group	Female Pop. 1966	Fertility Rate 1966-70	Live Births	Survival Rate	Survivors	Female Death Rate 1966-70	Female Pop. 1971	Actual Female Pop. 1971	Net Migration Estimate	Male Pop. 1966	Male Death Rate 1966-70	Male Pop. 1971	Actual Male Pop. 1971	Net Migration Estimate
0-4	116					.0030	106	172	+.623	118	.0055	100	143	+.430
5-9	127					.0017	116	166	+.431	116	.0021	117	140	+.200
10-14	117					.0017	127	164	+.299	139	.0023	116	160	+.344
15-19	137	.2398			106F	.0020	117	156	+.333	107	.0066	139	141	+.014
20-24	96	.8220				.0026	137	115	-.161	74	.0100	106	129	+.217
25-29	70	.8757				.0034	96	93	-.031	56	.0080	73	88	+.205
30-34	69	.4887				.0037	70	84	+.200	55	.0086	56	82	+.464
35-39	71	.2513			206	.0075	69	65	-.058	62	.0105	55	72	+.309
40-44	71	.0783				.0089	70	68	-.029	61	.0148	61	62	+.016
45-49	64	.0074			100M	.0141	70	85	+.200	55	.0259	60	69	+.150
50-54	63					.0229	63	67	+.063	54	.0405	54	63	+.167
55-59	70					.0336	62	83	+.339	48	.0643	52	67	+.288
60-64	69					.0530	68	79	+.162	47	.1005	45	54	+.200
65-69	73					.0816	65	73	+.123	55	.1666	42	69	+.643
70+	183					.4227	167	179	+.072	127	.5615	100	133	+.330
Total	1396							1652		1174			1472	

However, for the period after 1976 the migration rate into the area was expected to increase, especially of people in the middle range age groups and their families. Migration rates were expected to increase mainly because of job opportunities. Plans exist for the development of the Pembina valley.¹ It has been proposed that the Pembina River be dammed at two points, one in the U.S. and one in Canada. The result would be a large lake in the Pembina River basin. The storage would be used for recreation and irrigation purposes. Should the the United States and Canada agree to implement the development plan, southern Manitoba would experience an economic boom, first as a result of the construction of the dam and secondly as a result of irrigation which would introduce new farm crops and greater yields which may in turn create new processing industries and more jobs. As well, it might be the trend for many city people to have homes away from the noise and congestion of urban living thereby location in smaller rural communities. Tables 3 and 4 indicate the estimated migration rates used.

For estimation of birth, death and fertility rates, on the basis of past statistics, Winkler and Morden were considered as average and

¹ Report of the International Joint Commission, Canada and the United States on the Cooperative Development of the Pembina River Basin, October, 1967.

TABLE 3
MIGRATION RATES - MORDEN 1966-1980

Age Group	M A L E			F E M A L E		
	1966-70	1971-75	1976-80	1966-70	1971-75	1976-80
0-4	-.120	-.120	-.120	-.036	-.036	-.100
5-9	-.075	-.075	-.150	-.120	-.120	-.100
10-14	-.056	-.056	-.150	-.021	-.028	-.090
15-19	-.014	-.014	-.097	-.019	-.013	-.008
20-24	-.147	-.147	-.079	-.282	-.278	-.141
25-29	-.058	-.058	-.050	-.075	-.066	-.030
30-34	-.055	-.055	-.200	-.107	-.122	-.250
35-39	-.014	-.014	-.059	-.068	-.082	-.150
40-44	-.108	-.108	-.250	-.200	-.195	-.100
45-49	-.069	-.069	-.200	-.421	-.421	-.450
50-54	-.087	-.087	-.200	-.146	-.146	-.100
55-59	-.088	-.088	-.200	-.230	-.259	-.300
60-64	-.343	-.343	-.400	-.218	-.250	-.250
65-69	-.385	-.385	-.400	-.286	-.356	-.250
70+	-.321	-.321	-.350	-.337	-.386	-.250

TABLE 4
MIGRATION RATES - WINKLER 1966-1980

Age Group	M A L E				F E M A L E			
	1966-70	1971-75	1976-80		1966-70	1971-75	1976-80	
0-4	-.430	-.430	-.300		-.623	-.400	-.400	
5-9	-.200	-.200	-.200		-.431	-.431	-.450	
10-14	-.344	-.344	-.300		-.299	-.299	-.350	
15-19	-.014	-.014	-.100		-.333	-.333	-.350	
20-24	-.217	-.217	-.200		-.161	-.161	-.080	
25-29	-.205	-.205	-.250		-.031	-.031	-.015	
30-34	-.464	-.464	-.250		-.200	-.200	-.250	
35-39	-.309	-.309	-.300		-.058	-.058	-.025	
40-44	-.016	-.016	-.100		-.029	-.029	-.015	
45-49	-.150	-.150	-.200		-.200	-.200	-.250	
50-54	-.167	-.167	-.200		-.063	-.063	-.150	
55-59	-.288	-.288	-.300		-.339	-.339	-.400	
60-64	-.200	-.200	-.250		-.162	-.200	-.250	
65-69	-.643	-.643	-.450		-.123	-.200	-.250	
70-	-.330	-.330	-.400		-.072	-.200	-.250	

therefore Manitoba rates sufficiently represented the underlying characteristics of the population. The 1976 and 1981 birth, death and fertility rates were projected graphically from past trends. Table 5 shows the projected fertility rates of women in the child bearing range. Tables 6 and 7 indicate the estimated death rates for males and females from graphic projection of past rates.

TABLE 5

FEMALE FERTILITY RATES - Age Specific for Manitoba 1966-80
(Per 1000 Women)

Age Group	1966-70 ^a	1971-75 ^b	1976-80 ^b
15-19	239.8	219.5	198.9
20-24	822.0	807.1	791.3
25-29	875.7	862.5	847.1
30-34	488.7	476.3	455.0
35-39	251.3	230.1	210.9
40-44	78.3	71.2	67.5
45-49	7.4	7.0	6.4

^aSource: Dominion Bureau of Statistics - Vital Statistics,
The Queen's Printer, Ottawa, Sept. 1970.

^bEstimates using Graphic Projections.

TABLE 6

MALE DEATH RATES - Age Specific for Manitoba
(Per 1000 Population)

Age Group	1966-70 ^a	1971-75 ^b	1976-80 ^b
0-4	5.5	4.5	3.7
5-9	2.1	1.8	1.2
10-14	2.3	2.0	1.5
15-19	6.6	5.9	5.1
20-24	10.0	9.6	8.3
25-29	8.0	7.8	6.9
30-34	8.6	7.9	7.3
35-39	10.5	9.7	8.7
40-44	14.8	13.5	11.7
45-49	25.9	24.5	22.8
50-54	40.5	37.0	35.4
55-59	64.3	62.5	57.5
60-64	100.5	90.5	87.0
65-69	166.6	163.9	153.8
70+	561.5	551.5	523.0

^aSource:

^bEstimates using Graphic Projections

TABLE 7
FEMALE DEATH RATES - Age Specific for Manitoba
(Per 1000 Population)

Age Group	1966-70 ^a	1971-75 ^b	1976-80 ^b
0-4	3.0	1.7	1.3
5-9	1.7	1.2	1.0
10-14	1.7	1.2	1.0
15-19	2.0	1.6	1.1
20-24	2.6	2.1	1.4
25-29	3.4	2.6	1.8
30-34	3.7	2.8	2.0
35-39	7.5	5.9	5.0
40-44	8.9	7.3	6.0
45-49	14.1	13.4	12.5
50-54	22.9	23.4	22.4
55-59	33.6	30.1	29.0
60-64	53.0	50.1	48.3
65-69	81.6	79.3	76.9
70+	422.7	401.6	395.4

^aSource:

^bEstimates using Graphic Projections

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