

Trade Centre Systems in the Canadian Prairie Region

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ACRONYMS

CSC	Complete Shopping Centre
FCC	Full Convenience Centre
MCC	Minimum Convenience Centre
PSC	Partial Shopping Centre
PWR	Primary Wholesale Retail
SWR	Secondary Wholesale Retail

CHAPTER ONE: INTRODUCTION

Background

Most communities in the Prairie provinces are small. Eighty percent of the more than 1,000 centres in the three Prairie provinces included in this region have fewer than 2,000 inhabitants. At one time, all of these communities would have provided important commercial, educational, and other public services to their residents and to nearby rural dwellers. Through time, however, changes in production, transportation, communications, and distribution technologies have reduced the demand for labour in agriculture and other primary industries and have led to a more geographically concentrated pattern in the way some services, such as medical care and secondary education are delivered. As a consequence of these trends, and in the absence of new sources of demand for labour in rural areas, the number of rural dwellers in the Prairie region has decreased by about 25 percent from the peak figure of 1.5 million recorded in 1936. The occupational composition of this population has changed as well. Eighty percent of rural dwellers farmed in 1936. Now, farmers make up only about 25 percent of the rural population. A smaller rural population has reduced the market served by rural communities.

Another development that has affected the viability of rural communities is what might be called the urbanization of rural dwellers' preference patterns. Rural dwellers were once content (or constrained) to obtain most everyday necessities in the closest community. The dramatic improvement in rural roads and intercity highways from the 1950s on, coupled with dependable automobiles, greatly increased the mobility of rural dwellers. The desire to choose from a greater variety of outlets and products, and the possibility of paying lower prices, led to a geographic extension of shopping patterns. Whereas it might have taken 30 minutes to travel 15

kilometres in the 1930s, the same commitment of time would take the rural dweller 50 kilometres or more after the mid-1950s. Smaller, nearby communities were routinely bypassed in favour of larger, more distant, regional shopping centres or major cities. In the process smaller communities lost commercial and public functions while some larger, well-located rural centres and major cities expanded.

Today the role of most rural communities is different from what it was 50 (or even 20) years ago. Some larger communities, such as Brandon, Prince Albert, and Red Deer, have grown to be small thriving cities. And, on a smaller scale, several communities in each province—Winkler and Steinbach in Manitoba, Humboldt and Meadow Lake in Saskatchewan, and Brooks and Peace River in Alberta—have grown into important regional centres which provide a full range of common commercial and public services. Many of these centres have also attracted numerous manufacturing firms and now not only provide services to rural dwellers but are important local employment centres as well.

At the lowest end of the scale, however, approximately 80 percent of the communities in the Prairie region no longer play any systematic role in the trade centre network. These places are each home to between 150 and 400 people, provide few commercial services, and have virtually no public facilities. For this group, there are few, if any, commercial or public functions that are common to all of them.

The Policy Question

Primary industries, particularly agriculture, have been adversely affected by prolonged periods of low commodity prices at various times during the past two decades. The forestry,

mining, and petroleum/gas industries have restructured or are restructuring, and, except for particular firms or particular commodities, are now generally viable although cyclical price swings and trade disputes affect their stability. Grain farming remains depressed because of continued technological advances coupled with increased production by countries that were former customers, because of the economic collapse of the Soviet Union and by continued subsidies paid to producers in the EU and the United States. The support once provided by the Canadian government for subsidized transport and substantial transfer payments has been largely withdrawn.

Rural communities face a different set of problems. Low commodity prices have added to the difficulties of rural communities but are not the cause of the restructuring that is occurring. Nor would a recovery of commodity prices rejuvenate those rural communities that have lost most of their trade and service functions. Loss of employment in primary industries because of productivity growth, rural-to-urban migration, increased shopping in urban centres by rural residents and the urban-based growth of the knowledge-based service industries have all contributed to the decline of rural communities.

Nevertheless, the presence of a critical set of viable rural communities is a necessary condition for a viable rural economy. There is a limit to the amount of time rural dwellers can spend driving to obtain consumer goods and farm supplies or that children can spend on school buses. Maintenance of a viable set of rural communities is necessary in order to help control the cost of rural productive activity and rural living. But of equal importance to the provision of consumer and producer goods and public services are the jobs that are now available in viable rural centres. For farm families, these jobs are crucial in maintaining farm family income at

levels more or less equal to the incomes earned by families living in urban areas. At the beginning of the 21st century, a greater percentage of farm family income is received from wages and salaries earned in off-farm employment than from the sale of agricultural products (including the remaining production-related transfer payments).

Most nonfarm jobs are held by farm females, over 60 percent of whom have off-farm employment. The great majority of these jobs are in the schools, hospitals, and administrative offices in viable rural centres. Even for farm males, more than 30 percent of whom spend more hours in off-farm employment than in farming, a substantial number of their jobs are also found in rural communities. Many, whose primary job is still farming, also have part-time, off-farm employment.

While the necessity of maintaining an adequate number of viable centres in the rural economy is generally recognized, it is less clear where the division is between viable and nonviable centres and which particular communities fall into each category. There is no good single indicator, such as population, that distinguishes viable from nonviable centres. Instead, it is the entire array of public and commercial goods and services available in a community, along with that community's position in the trade-centre hierarchy, which will determine its viability. Continued viability over time will likewise be determined by the community's position in the evolving trade-centre system.

The purpose of this report is to provide some guidance in this regard. As part of the overall analysis, communities in each of the three Prairie provinces are evaluated in terms of those variables that include consumer and producer services, professional services, manufacturers and other producers, and public infrastructure. The trade centre systems for all

three Prairie provinces are analyzed for the year 2001 in this report. This analysis will help to identify which communities are currently providing a sufficient range of commercial and public functions to ensure that they maintain their viability into the future. The same communities are also the places in which future value-added processing and other types of rural based manufacturing could expand. The most viable rural communities are candidates for expansion into the information and knowledge-based industries of the New Economy.

The framework within which these evaluations are performed is referred to as Central Place Theory, which is summarized in the next chapter. Data sources and methodology are described in chapter three. Chapters four, five and six provide classifications of Saskatchewan, Manitoba and Alberta communities respectively and compare the structure of their trade centre systems for the year 2001 with an analysis of this type conducted in 1991 for Manitoba and Alberta and from 1961 on for Saskatchewan. Conclusions follow in chapter seven.

CHAPTER TWO: CENTRAL PLACE THEORY

Central place theory is the theory most widely used to explain the number, size, and spacing of centres in a system of urban places. According to this theory, the role of the central place is to act as a service and distribution centre for its hinterland, providing its own, and the adjacent, population with goods and services. Why such functions are provided from central places is explained by the concepts of the demand threshold and the range of the good. The threshold is defined in terms of the minimum level of population and income required to support a particular activity, while the range refers to the maximum area that the activity in question can serve from a particular place. The range is limited because transport costs raise the price of the item as distance from the central place increases. This is true regardless of whether the item is a good distributed from the centre or is one that customers have to travel to the centre to obtain.

Since the threshold and range will differ among various activities, a hierarchical spatial structure results in which the activity with the lowest-threshold requirement is found in all central places. In today's context, a gasoline service station would typify a service function with a low-demand threshold. Only a small population is required to provide the level of demand necessary to support a gasoline station. Therefore, many exist and they are distributed widely-wherever a small concentration of population is found. Activities requiring a larger threshold, however, are found in fewer and larger places. Since the size of service areas varies directly with the size of centres, the complementary regions of small places are contained within those of larger places. Table 1 illustrates how n-orders of functions are provided by m-levels of centres.

The required number of functions of each type, and thus the number of centres of each size within the system, is largely a function of total population and income, while the spacing of

centres is determined by population density and accessibility. Higher incomes and larger populations are associated with a greater number of functions. Although, the number of centres is directly related to population density, it is inversely related to the quality of the region's transportation systems.

Table 1
n-Orders of Functions Provided by m-Levels of Centres

Order of Function	Level of Centre					
	Lowest	m-4	m-3	m-2	m-1	m
n						x
n-1					x	x
n-2				x	x	x
n-3			x	x	x	x
n-4		x	x	x	x	x
lowest x	x	x	x	x	x	

Referring to Table 1, it is apparent that the lowest level of centre would provide only the lowest-order function. The next largest community, m-4, would also provide the lowest order function to its own and the immediately adjacent rural population. But the larger community also offers the next highest-order function, n-4. These services are provided to its own residents plus the population contained within several adjacent centres of the lowest level and all of the rural population contained within this larger market area. Each successively higher-order function, offered from increasingly higher-level centres, is provided to all lower-level centres and the rural populations within the ever-larger market areas of the higher-order functions. Often, several functions will have approximately the same demand threshold and a similar range. Thus, the number of functions of any given order will typically be greater than the single function implied in Table 1.

Where the individual community is situated relative to the largest centres in the system also influences the size of the demand threshold required to support each function. Most Saskatchewan residents, for example, make some consumption expenditures in one or more of the province's 10 largest centres. The closer they live to one of these larger places, the more often they will visit them. Thus the closer a smaller community is to one of the province's major centres, the greater the population required to support any type of function.

Some results from a recent study of demand thresholds for a variety of functions at different distances from Saskatchewan's 10 largest communities are reported in Table 2 (Wensley and Stabler 1998).

Populations reported in Table 2 are *community* populations associated with the presence of the functions identified. Since approximately 30 percent of Saskatchewan's population lives outside the 588 communities used as the base to estimate demand thresholds, the actual populations required to support the functions named would be approximately 30 percent larger than the figures appearing in the table.

Activities with low demand thresholds identify the more common types of businesses frequently present in smaller communities: restaurant, grocery store, gas station, hotel (beverage room). Activities with higher demand thresholds are associated with businesses usually found in larger rather than smaller centres: furniture stores, drug stores, automobile sales.

The functions in Table 2 are arrayed in ascending order of population required to support a single outlet at a distance of 150 kilometres from one of the province's 10 largest communities. The fact that the entries in the other distance columns do not increase monotonically indicates that some functions are more sensitive than others to competition from similar businesses in

Table 2: Estimated Population Required to Sustain Business Activities at Various Distances from a Major City in Saskatchewan

Business Activity	Distances from the Nearest City (km.)			
	25	50	100	150 ^a
Construction	295	270	250	235
Hotel	515	395	305	265
Bank	670	505	380	320
Gasoline Station	505	465	435	415
Credit Agency	550	495	445	420
General Store	955	700	515	430
Grocery Store	640	550	475	435
Bulk Fuel	1,005	750	555	470
Restaurant	685	615	555	520
Building Materials	825	705	605	550
Farm Equipment	1,045	845	685	605
Transportation	1,055	850	690	610
Wholesale	1,045	870	720	645
Clothing Store	1,505	1,155	890	765
Special Credit	1,140	995	870	805
Auto Repair	1,185	1,025	890	815
Miscellaneous Repair	1,410	1,235	1,080	1,000
Automobile Sales	2,190	1,675	1,285	1,100
Home Furnishings	1,995	1,590	1,265	1,110
Special Foods	1,825	1,560	1,335	1,220
Drugstore	1,875	1,695	1,530	1,445
Recreation	3,635	2,730	2,055	1,735
Business Services	2,150	2,165	2,180	2,190
Furniture Store	3,100	2,760	2,460	2,295
Personal Services	3,360	2,920	2,540	2,340
Warehousing	3,860	3,545	3,260	3,100
Laundry ^b	-	-	4,645	3,870

^a Ranked in ascending order of population requirements at 150 kilometres.

^b Population estimate greater than largest community population in sample.

larger places. Activities less sensitive to competition from larger places include gas stations, construction firms (often local craftsmen), and restaurants. Such activities are characterized as *local market-area dependent* functions.

Activities producing products or services which are characterized by less frequent purchases, greater differentiation, and higher expenditures per sale are more likely to be affected by competition from a larger city. Thus clothing stores, home furnishings, and automobile sales are classified as *regional market-area dependent* functions. For these activities the population required to support one outlet at 25 kilometres from a major centre is approximately twice that required at 150 kilometres. For the local market-area dependent activities previously named, the difference is only 25-30 percent.

In Table 3, the community populations required to support *multiple* outlets of the selected functions, at 150 kilometres from a major centre, are identified. Activities offering relatively homogeneous products or services display constant or increasing population increments to support additional outlets in the same community. Hotels, farm equipment dealers, general stores, grocery stores, gas stations, banks (and credit unions), and auto repair shops fall into this category. Activities offering more differentiated products or services, such as clothing stores, home furnishings stores, automobile dealerships, and business services, are associated with decreasing population increments required to support additional outlets. In general, these relationships would hold for business functions in Alberta and Manitoba, though the specific population requirements might differ by small amounts.

Distortions from the theoretical model occur in response to several common phenomena. Rugged topography or uneven resource distribution, for example, leads to uneven population distribution and to transport networks that provide better access to some areas than others.

Table 3: Populations Required to Support Multiple Establishments in a Community Located 150 kilometres from the Nearest Major City in Saskatchewan

Business Activity	Number of Establishments			
	1	2	3	4
Construction	235	455	675	890
Hotel	265	645	1,095	1,590
Bank	320	845	1,490	2,225
Gasoline Station	415	910	1,440	1,995
Credit Agency	420	790	1,150	1,500
General Store	430	1,280	2,435	3,835
Grocery Store	435	910	1,405	1,915
Bulk Fuel	470	1,130	1,900	2,745
Restaurant	520	950	1,360	1,745
Building Materials	550	940	1,385	1,825
Farm Equipment	605	1,215	1,830	2,445
Transportation	610	1,290	2,000	2,735
Wholesale	645	1,270	1,895	2,520
Clothing Store	765	1,180	1,530	1,835
Special Credit	805	1,280	1,675	2,030
Auto Repair	815	1,640	2,465	3,295
Miscellaneous Repair	1,000	1,975	2,945	3,910
Automobile Sales	1,100	1,875	2,570	3,215
Home Furnishings	1,110	1,765	2,320	2,820
Special Foods	1,220	2,160	3,025	3,840
Drugstore	1,445	2,405	3,250	4,020
Recreation	1,735	2,880	3,875	4,785
Business Services	2,190	3,435	4,470	5,390
Furniture Store	2,295	3,645	4,780	5,795
Personal Services	2,340	3,575	4,565	5,470
Warehousing ^a	3,100	5,125	-	-
Laundry ^a	3,870	5,910	-	-

^aPopulation estimate greater than largest community population in sample.

Further, the theory provides a better explanation of the functioning of centres in agricultural than in highly industrialized regions. The service centre role is more clearly apparent when there are few places of large size in a region. When there are several large centres of similar size, there is a greater possibility of specialization by function, such as manufacturing or government, for example, which may lead to a distortion of the urban size hierarchy.

In spite of these qualifications, the theory is the most useful one available for the analysis of trade centre systems. No other theory stresses so much the fundamental interdependence of the community and the region within which it is located. Further, at the operational level, the specific theoretical relationships are capable of empirical verification.

Central place theory is well suited for the topic at hand. The Prairie economy was initially based on agriculture, and this sector still provides the basis for much of the employment and income generated within the region. The majority of Prairie communities came into existence to serve the needs of the agricultural economy. Indeed, their locations were determined primarily by the transportation requirements of the grain industry, and many communities still perform an agricultural trade centre function. In addition, there are only five large cities in the region. These five have specialized to an extent, but all are still dominant communities in the region's trade centre system.

Central place theory describes a system in equilibrium, that is, one in which population size and distribution, income, and technology are unchanging. Because of this property, it is referred to as a static, general equilibrium theory, which might at first appear as a drawback given the significant changes in technology, income, and the distribution of the provinces' populations over the past several decades. The apparent limitations of a static theory are

circumvented to a degree by performing what is referred to as comparative static analysis, whereby the characteristics of the system are completely identified at two points in time. In a dynamic economy, the system would be expected to differ at dates separated by several years. These differences then become the focus of attention, and an effort is made to interpret and explain the changes noted by reference to evolving technologies, improvements in transportation, rising incomes, and the behaviour of people as both consumers and producers, as well as to other influences that may become apparent in the conduct of the analysis. (A thorough discussion of central place theory is available in Berry and Parr 1988).

CHAPTER THREE: DATA SOURCES AND METHODOLOGY

Introduction

This study of the trade centre hierarchies in the three Prairie provinces updates studies performed at various time in the past. For Saskatchewan, complete trade centre studies were conducted for four different dates: 1961; 1981; 1990; and 1995. For Alberta and Manitoba, one previous study was conducted for each of these provinces, both in 1991.

For Saskatchewan, an unchanging group of 598 communities was analysed at each point in time and this group is utilized again for this study. For Alberta, for 2001, we have grouped the communities immediately adjacent to Calgary and Edmonton with these cities, reflecting our conviction that they are functionally inseparable from these major centres. In doing so, we have followed Statistics Canada's geographic aggregation of "Municipal Components for Calgary (and Edmonton)." In the 1991 study we did not perform these aggregations. Statistics Canada's Municipal Components for Winnipeg did not include any other communities (only rural municipalities and Reserves). Thus there was no aggregation for either 1991 or 2001. Finally, for Saskatchewan, the original studies did not involve any aggregation and that specification has been retained throughout in order to ensure comparability.

For all three provinces, remote resource communities, communities in (or immediately adjacent to) national or provincial parks and communities on Indian Reserves are excluded. What emerges through this process is a group of conventional trade centres in the continuously settled (southern) parts of each province. For 2001, there are 211 communities in Manitoba included in this analysis, 298 for Alberta and 598 in Saskatchewan. For Saskatchewan all of the communities had populations of 50 or more in 1961 and, although several have fallen below this

figure since, they have been retained for continuity. For Manitoba and Alberta, all communities included in the 2001 analysis had 1996 populations of 50 or more.

In all previous studies, 34 variables were used to describe each community. For 2001, the number of variables used to describe the commercial, industrial, and public structures was expanded to 68. The revised set of variables will produce a more sensitive, improved, classification of the communities that form the trade centre systems. Because it is not *identical* to the data set used in previous studies, however, the 2001 classification is not *precisely* comparable to those of the past. If the old data sets had been used for the present study, it is possible that the outcomes would have been slightly different. Similarly if the present data set had been used for the previous studies, the results would have been more precise. It is possible that those results would have been somewhat different.

Data Sources

Data describing each community were collected from a variety of sources. Information on the number of business outlets in the communities was purchased from Dun & Bradstreet which maintains a data base which lists businesses according to individual Standard Industrial Classification (SIC) codes, by community.

In all previous studies the businesses were grouped into 29 categories. For the present study an expanded list of 59 individual business functions were used to describe the commercial and industrial structure of communities. The expanded set was created, in the first instance, by listing separately some functions that were previously combined. For example, laundries and dry cleaners which were previously combined were identified separately for 2001. This provides

for greater discrimination among communities since dry cleaners require a larger population to support them than do laundries. Secondly, some functions such as computer stores and ATMs, which appeared after 1961 (and were consequently never individually identified in the variable set) were added for the present study. In another refinement, three separate categories of services to business management (Services to Primary Producers, Professional Business Services, and Other Business Services) replaced a single category (Business Services) used in the earlier studies. In this case the revision reflects the fact that this function has become much more important in the economy since the original data set was identified, and therefore needed to be included in the 2001 profiles in greater detail. The number of lawyers was added as a variable for the first time.

Yet another revision replaced variables previously recorded as either “present or absent” with a quantitative measurement. Thus high school enrollment (grades 10, 11, and 12) at schools in each community replaced an indicator of the presence or absence of a high school (and elementary schools were included for the first time, also by way of enrollment in elementary grades K through 9). Health care facilities were represented this time by four variables (instead of the former two—presence or absence of hospitals and special care homes) to reflect the major changes that have occurred in this sector. For two new variables, Clinics and Health Centres, simple presence or absence was indicated. The number of rated beds was used to represent Hospitals (acute care and respite) and Special Care Homes (long term care). Where long term beds were present in Health Centres, the community was identified as both having a Health Centre and having the indicated number of beds in a ‘Special Care Home.’ The Grain Elevator

variable (previously presence or absence) was represented by the total number of deliveries (tonnes) at that point.

In all, 68 variables were used to describe the functional structure of communities in the present study, replacing the 34 previously utilized. No variable used in the previous studies was omitted, though several were disaggregated and refined units of measurement were developed for several others. In addition, several variables not previously utilized were added for the present study as noted above. These modifications, additions, and refinements provide a more sensitive and discriminating metric for assessing and classifying communities into functional categories within the trade centre hierarchy.

Data used for all variables were 2000 or 2001 values with one exception. It was necessary to use the 1996 census for population counts. All data sources are listed in the References.

Methodology

In order to group the communities in the study into functional categories, a cluster analysis program is utilized. Cluster analysis is a classificatory technique designed to select subsets of mutually similar objects from the set of all such objects. In this case, the task is to select subsets of functionally similar communities from the entire set of communities for each province individually. Each community is described by a comprehensive set of attributes, all of which are considered simultaneously in the classification scheme. The relevant quantifiable characteristics of a community include population size, the entire array of business functions, and the additional infrastructure as described under Data Sources in the preceding section.

Through a complex computer algorithm, the program is able to evaluate, compare, and ultimately group centres on the basis of their similarities in terms of the dimensions in which they are described.

For the cluster analysis, the raw data are standardized prior to clustering. A similarity matrix is subsequently computed where the coefficients represent the distance between communities. Clusters were formed using Ward's method, which minimizes the distance between the subject and its group centroid as fusion proceeds.

This technique produces a number of clusters. Given the theoretical context (Central Place Theory) the anticipated number is six, representing the functional categories in a trade centre hierarchy. These categories are commonly described as Minimum Convenience Centre (MCC), Full Convenience Centre (FCC), Partial Shopping Centre (PSC), Complete Shopping Centre (CSC), Secondary Wholesale-Retail (SWR), and Primary Wholesale-Retail (PWR).

Minimum Convenience Centres are the smallest, and functionally simplest, trade centres, offering a small, though eclectic, set of services such as perhaps a gasoline station or a restaurant, functions that require a relatively small-sized market area. In addition, a limited number of less frequently used goods or services is occasionally available. In the next tier are Full Convenience Centres, which typically offer a set of goods and services that require a somewhat larger-sized market area, such as groceries and banking services. Communities in each subsequent tier in the hierarchy (Partial Shopping, Complete Shopping, Secondary Wholesale-Retail, and Primary Wholesale-Retail) perform all of the functions of the centres in the previous tiers and, in addition, offer more sophisticated goods and services that require larger market areas. The particular functions performed at each tier will vary over time and from one

geographic area to the next, but the hierarchical structure of trade centres will persist because of the differential market areas required to support a complete array of goods and services.

After formation of the clusters they are tested for compactness and distinctiveness using multiple discriminant analysis. Discriminant analysis calculates canonical discriminant functions for the trade centre system which condense the community information to a reduced number of dimensions, five in this case (one less than the number of groups). The centroid of each group is positioned on each of the five dimensions described by the discriminant functions. If the clusters are unique, each group will have different scores on the discriminant functions. The individual cases will be grouped closely around the group centroid on each discriminant function if the clusters are compact. If the clusters are not compact, the discriminant analysis will produce a suggested re-assignment.

Once the cluster and discriminant analysis are completed, description and analysis of the trade centre relationships can begin.

CHAPTER FOUR: SASKATCHEWAN'S TRADE CENTRE SYSTEM

The Setting

We begin with an analysis of Saskatchewan's trade centre system because its evolution has been systematically studied for over four decades. Thus trends that have been observed in Saskatchewan can provide a context within which to view Manitoba and Alberta. Though unobserved in the systematic way Saskatchewan has been, it is virtually certain that similar patterns have unfolded in those areas of the other two Prairie provinces whose economies are similar to Saskatchewan's.

The original economic base of dry land grain farming and mixed grain-livestock farming, which characterized the area roughly between Portage la Prairie and Drumheller, produced a generally similar settlement pattern with numerous small communities. As it turned out, these communities were spaced much too closely to survive the technological changes in production, transportation, communications, and distribution that occurred over the roughly 70 years since the end of the settlement period. A generally similar pattern of farm consolidation has characterized this broad region.

West of Drumheller and east of Portage la Prairie, more diversified economies and the spread effects from Edmonton, Calgary, and Winnipeg have produced very different patterns of economic change. Within these areas, trade centre consolidation has been accompanied by the dramatic growth of some rural places.

Saskatchewan 1961-1995

The functional composition of communities in Saskatchewan's trade centre system altered dramatically between 1961 and 1995. These comparisons are provided in Table 4.

Between 1961 and 1981, a very substantial downward movement of communities in the middle categories occurred.

Table 4: Functional Classification, Saskatchewan Centres, 1961-1995

Functional Classification	1961	1981	1990	1995
Primary Wholesale-Retail (PWR)	2	2	2	2
Secondary Wholesale-Retail (SWR)	8	8	8	8
Complete Shopping Centre (CSC)	29	22	6	7
Partial Shopping Centre (PSC)	99	30	46	22
Full Convenience Centre (FCC)	189	136	117	59
Minimum Convenience Centre (MCC)	271	400	419	500
Total	598	598	598	598

In 1961, for example, there were 317 communities situated in the three clusters between the Secondary Wholesale-Retail (SWR) level and the lowest functional classification, the Minimum Convenience Centre (MCC). By 1981, the number occupying this interval had decreased to 188. During this time period, the number of communities in the Complete Shopping Centre (CSC) category decreased by only seven (25 percent), but the Partial Shopping Centre (PSC) and the Full Convenience Centre (FCC) categories experienced much greater downward movement.

Between 1981 and 1990 there was some further downward movement of centres in the middle categories, but at a much slower rate. The number of communities in the three clusters below the SWR and above the MCC levels declined from 188 in 1981 to 169 in 1990. What is

most striking about the 1981-90 period is the pronounced decline of communities that had held CSC status in 1981--only 6 of 22 centres (27 percent) remained in this category in 1990.

In the 1990-1995 period, there was again a very substantial downward reclassification of communities in the lower middle categories. The number of centres between the SWR and the MCC levels decreased to 88. Thus, over the 34 years between 1961 and 1995, middle-level communities decreased from 53 percent to 15 percent of the total, while the number of centres in the bottom (residual) category, MCC, increased from 45 to 84 percent.

The interval between 1990 and 1995 was again characterized by stability at the top three functional levels; indeed, there was one addition to the CSC category. The most striking feature of the 1990-95 period, however, was the dramatic downward reclassification of the communities that had occupied the PSC and FCC categories in 1990: 50 percent of the 1990 PSCs and 70 percent of FCCs had moved to a lower classification.

Over the interval between 1961 and 1995, the experience of communities below the Secondary Wholesale-Retail category (in 1961) was commonly a gradual downward filtering through a number of stages. Most communities classified as Complete Shopping Centre, or below, in 1961, first gradually filtered to the bottom of the functional category they were originally observed in. They were subsequently reclassified downward where they became the top communities in their new category. As more time passed, they slowly descended to the bottom of their new functional category and were eventually again reclassified to the next lower level.

At the top of the hierarchy, the 10 Wholesale-Retail centres retained their status throughout the 1961-1995 period. In addition, 6 communities classified as Complete Shopping

Centres in 1961 retained their status over the entire interval. A seventh, Melville, began as a CSC, declined to PSC in 1990, and regained CSC status in 1995. These 17 communities grew substantially in population as well as number and variety of businesses and infrastructure over the 34- year period ending in 1995.

Below the CSC level, downward reclassification was the common experience although 5 of the original 99 PSCs did retain their status between 1961 and 1995. Of the 22 communities classified as PSCs in 1995, most had declined into that category between 1961 and 1981.

Saskatchewan's Trade Centre Classification 2001

At the top three levels of the hierarchy, the 2001 classification is almost identical to that of 1995. Saskatoon and Regina retain their dominant positions as the two PWR centres and the same 8 secondary cities continue to occupy the SWR classification.

The Complete Shopping Centre category includes the 7 communities classified at this level in 1995 (Humboldt, Kindersley, Meadow Lake, Melfort, Melville, Nipawin, and Tisdale). There has been one addition at this level, however. Assiniboia, which was a CSC between 1961 and 1981, but declined to PSC in 1990, regained CSC status in 2001.

At the bottom of the hierarchy, the 1995 and 2001 classifications contain virtually the same number of communities (502 in 2001 and 500 in 1995) , although the specific communities included differ slightly. The number of centres between the SWR and MCC levels declined slightly from 88 to 86 in 2001¹.

¹Between 1995 and 2001, 15 communities rose from the MCC to FCC status while 17 declined from FCC to MCC.

The major difference between the 2001 and 1995 classifications occurs at the PSC and FCC levels. While there were 22 PSCs and 59 FCCs in 1995, the 2001 classification contains only 6 PSCs, while the FCC category has increased to 72. Of the 22 communities classified as PSCs in 1995, one (Assiniboia) rose to CSC status, 6 retained their PSC classification and 15 were reclassified as FCCs. The functional classification for 2001 is shown in Table 5.

Table 5
Functional Classification, Saskatchewan Centres, 2001
 2001

Primary Wholesale-Retail (PWR)	2
Secondary Wholesale-Retail (SWR)	8
Complete Shopping Centre (CSC)	8
Partial Shopping Centre (PSC)	6
Full Convenience Centre (FCC)	72
<u>Minimum Convenience Centre (MCC)</u>	<u>502</u>
Total	598

The overall structure of the system and the pattern of change observed—continued downward reclassification of middle-level communities—between 1995 and 2001 is consistent with historical evolution of Saskatchewan’s hierarchy.

The 2001 profiles of the six functional classifications, provided in Table 6, indicate the role played by communities at each level. The 10 communities in the Primary and Secondary Wholesale-Retail functional classifications are distinguished from those in the bottom four in several ways. They provide multiple outlets of a complete range of consumer and producer services. They also have a greater variety and concentration of manufacturing and construction activity. Their health and educational facilities are more numerous, larger and more specialized.

Table 6: Average Number of Businesses of Various Types in Saskatchewan Trade Centres, 2001

Count	502	72	6	8	8	2
Functional Classification	Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale-Retail	Primary Wholesale-Retail
Population	168	1,083	2,233	4,364	18,361	187,024
All Consumer Services	5.65	36.89	101.82	131.70	392.71	3,181.50
Luggage	-	0.01	-	-	0.50	<u>5.00</u>
Camera Stores	-	0.01	0.17	0.50	<u>0.88</u>	6.00
Dry Cleaning	-	0.04	-	0.38	<u>1.13</u>	21.50
Department Stores	-	0.11	0.33	0.50	<u>2.00</u>	7.50
Security Brokers	-	0.18	0.17	0.25	<u>2.88</u>	34.00
Laundries	0.01	0.08	0.50	<u>0.88</u>	4.63	30.50
Shoe Stores	-	0.11	0.33	<u>1.13</u>	2.25	22.50
Furniture Stores	0.01	0.22	<u>1.00</u>	1.38	4.63	32.50
Credit Agencies	0.16	0.76	<u>1.17</u>	1.50	2.50	27.00
Electronics Outlets	0.04	0.33	<u>1.33</u>	3.25	6.63	48.50
Jewellery Stores	-	0.15	<u>1.67</u>	0.75	1.75	16.50
Building Materials	0.09	0.72	<u>1.67</u>	1.88	6.75	29.50
General Merchandise	0.24	0.81	<u>1.67</u>	2.63	3.25	14.00
Drug Stores	0.04	0.86	<u>1.83</u>	1.75	3.88	37.50
Other Personal Services	0.03	0.85	<u>1.83</u>	2.25	11.13	77.00
Other Food Stores	0.11	0.82	<u>1.83</u>	5.25	7.38	83.50
Lawyers	0.01	0.40	<u>2.50</u>	7.00	24.00	208.50
ATMs	0.01	0.78	<u>2.67</u>	4.63	15.75	147.00
Floor/Drap./Appliances	0.03	0.58	<u>2.83</u>	5.63	13.38	85.00
Apparel Stores	0.02	<u>0.90</u>	3.50	5.38	11.88	128.50
Beauty/Barber Shops	0.06	<u>0.90</u>	3.83	1.50	13.13	139.00
Insurance Agents	0.22	<u>1.01</u>	2.17	2.88	8.25	106.50
Hardware Stores	0.18	<u>1.24</u>	2.50	3.38	5.88	27.50
Hotels	0.32	<u>1.28</u>	4.67	3.38	10.38	39.50
Recreation	0.17	<u>1.32</u>	4.50	5.25	15.38	158.00
Service Stations	0.34	<u>1.47</u>	2.83	3.00	10.00	69.50
Banks or Credit Unions	0.38	<u>1.79</u>	3.17	3.88	8.13	58.00
Misc. Retail	0.26	<u>1.89</u>	3.50	7.75	23.13	178.50
Grocery Stores	0.38	<u>1.99</u>	4.00	3.50	13.00	87.50
Automobile Dealers	0.13	<u>2.10</u>	5.83	7.63	19.75	108.00
Eating and Drinking	0.43	<u>2.19</u>	7.33	7.75	28.50	325.00
Misc. Repair	0.19	<u>2.93</u>	9.33	11.13	40.00	347.00
Auto Repair	0.31	<u>3.00</u>	8.83	10.25	29.50	241.50
Real Estate Agents	<u>1.48</u>	5.06	12.33	13.50	40.50	234.00

All Producer Services	2.08	13.08	30.51	38.91	153.78	1,688.50
Warehousing	0.03	0.32	0.83	<u>0.88</u>	4.38	36.00
Air Transportation	-	0.06	-	<u>1.13</u>	2.00	6.50
Professional Bus. Serv.	0.06	0.58	<u>1.17</u>	3.38	17.88	385.50
Bulk Fuel	0.23	0.85	<u>1.67</u>	1.50	2.38	5.00
Communic./Utilities	0.02	0.35	<u>2.17</u>	1.63	7.38	58.00
Other Business Services	0.10	<u>0.89</u>	2.67	3.88	25.25	348.50
Implement Dealers	0.15	<u>1.06</u>	4.83	2.63	6.00	24.00
Bus. Serv. to Primary	0.34	<u>2.29</u>	6.17	5.13	21.63	79.00
Transportation	0.29	<u>2.29</u>	4.17	5.50	23.88	165.50
Other Wholesale	0.86	<u>4.39</u>	6.83	13.25	43.00	580.50
Grain Deliveries ²	<u>10.60</u>	62.92	153.80	217.43	333.63	410.10
All Producers	0.97	7.97	17.67	30.03	97.27	994.50
Leather Manufacturing	-	0.06	0.33	-	-	<u>3.00</u>
Textiles Manufacturing	-	0.07	-	-	0.13	<u>6.00</u>
Furniture/Fixtures Mfg.	0.01	0.03	-	0.25	0.25	<u>15.50</u>
Paper Manufacturing	-	-	-	0.25	<u>1.00</u>	4.50
Apparel Manufacturing	0.01	0.03	0.50	0.38	<u>1.00</u>	16.50
Electrical/Instruments	0.01	0.03	0.17	0.38	<u>1.25</u>	35.00
Chem/Petro/ Mfg	0.03	0.19	0.17	0.63	<u>2.25</u>	44.50
Misc. Manufacturing	0.01	0.15	0.67	0.50	<u>2.38</u>	34.50
Stone/Concrete Mfg.	0.02	0.38	0.50	<u>1.25</u>	3.25	23.50
Lumber/Wood Mfg.	0.06	0.39	0.67	<u>1.50</u>	5.25	30.00
Food Manufacturing	0.06	0.33	0.83	<u>1.88</u>	2.88	39.50
Pri. Metal/Metal Fab.	0.03	0.21	<u>1.00</u>	1.38	3.50	46.50
Printing	0.02	0.56	<u>1.33</u>	2.00	5.13	63.50
Equipment Mfg.	0.10	0.65	<u>1.67</u>	3.13	6.25	55.50
Construction	0.61	<u>4.89</u>	9.83	16.50	62.75	576.50
Public Infrastructure						
Clinics ³	0.01	0.03	-	0.13	0.38	<u>1.00</u>
Health Centres ³	0.06	0.39	-	-	-	0.50
Doctors ⁴	0.06	<u>1.51</u>	2.67	7.00	33.5	503.50
Hospital Beds	0.14	<u>7.74</u>	20.50	38.50	103.88	742.00
Special Care Beds	<u>1.55</u>	34.83	49.33	93.00	206.88	1,372.50
HS Enrollment	<u>12.78</u>	94.29	186.83	317.00	1,212.25	9,174.00
ES Enrollment	<u>42.44</u>	263.11	487.00	885.75	3,230.13	26,839.00

¹ This is the only function that meets the threshold at one level and not at a higher.

² Grain deliveries, unlike other functions in this group, refers to the volume of business rather than the number of business outlets

³ For this variable the presence or absence of the function is measured.

⁴ Where a doctor is present for one day a week, for example, this is counted as .20.

At the top end, the major distinction between the PWR and SWR categories is the depth and variety. PWR centres, for example, have 5 to 10 times the number of consumer and producer services firms of each type per community than the SWR centres. Therefore PWR centres offer the greatest range in variety, quality and price. The producing sector (manufacturing and construction) is, likewise, much larger in PWR centres with from 10 to 30 times as many firms per community as SWR centres. Health and education facilities and services are also much more numerous and varied at the PWR level.

In distinguishing between SWR and CSC communities, the hierarchical structure of the system starts to become very explicit. While most common consumer services are provided at the CSC level, a few high-order functions, such as camera stores, dry cleaners, department stores, and security brokers are much less common. The common presence of these functions at the SWR, but not the CSC, level is indicated by the block of numbers in *italics, bold, and underlined* that extends between the SWR and the CSC columns in Table 6. With respect to Producer Services, the major difference between these two levels is in the greater number of firms (in total and of each type) per community in SWR centres. In the Producing sector, a major distinction does become apparent, however. Manufacturing activity at the CSC level (and lower) is concentrated in basic resource processing, as well as fabricating and assembly types of activities. While Primary and Secondary Wholesale-Retail centres also engage in these basic types of manufacturing, they are (almost exclusively) home to most of the province's intermediate-stage manufacturers and producers of final consumer goods—activities which are less common in centres below the SWR level. In health and education functions the difference between CSC and SWR levels is number and size rather than presence or absence. Although the

8 CSC centres are overshadowed by communities in the SWR category, they are nevertheless the largest and most viable of the province's rural communities.

Complete and Partial Shopping Centres differ less in terms of functional distinctiveness than in number of outlets per function. Nevertheless, some higher-order consumer services (shoe stores and laundries) are common at the CSC but not the PSC levels. In addition, air transportation, common at the CSC level, is almost totally absent at lower levels. Again, in terms of manufacturing and construction activity, CSC communities have, on average, a much larger number of firms than PSCs. A similar comment can be made about health and education where the number and size of functions is larger in CSC communities.

There is a very substantial difference between PSC and FCC classifications, however. FCCs do not provide a full range of consumer services. Rather they typically provide only one to two outlets of each of the most basic consumer services—food, gasoline, banking, minor repair—while PSCs provide multiple outlets of these basic services plus a dozen or so more specialized services. A large block of consumer services shown in *italics-bold-underlined* ranging from Jewellery Stores to ATMs first appear with regularity at the PSC level. Similarly, while several producer services are present, the high-tech professional business services (management consultants, engineers, architects, accountants, etc.) firms are uncommon at the FCC level. Manufacturing is largely absent as well in FCC communities, although construction firms are still common. Health and education functions have become fewer and smaller. The average statistics of 1.5 doctors and a hospital with 7.74 beds reflect the fact that these services are not available in all FCC communities. In fact only 85 percent of FCC centres have any level of local access to a doctor (even a one-day-a-week presence is counted as the availability of this

service), while only 44 percent of FCC communities have a hospital. Nevertheless, most FCCs continue to perform a locally useful function in the provision of several day-to-day requirements.

Finally, the 502 communities in the MCC category, as a group, no longer perform a coherent role in the trade centre network. There is no single function that can be counted on to be present in each of these places. While the average MCC will have approximately six consumer outlets, they consist of an eclectic combination of functions that vary from place to place. Infrastructure is largely absent and only the occasional producer or producer service outlet is found in communities at this level.

Figure 1 is a map of Saskatchewan's 2001 trade centre hierarchy showing communities in the top three functional levels.

An additional summary perspective of Saskatchewan's trade centre system is shown in Table 7 where the total population of the communities that comprise the hierarchy is allocated to the six functional levels. These statistics indicate, perhaps even more forcefully than the preceding discussion, the importance of the centres in the top functional classifications. The 10 communities in the Wholesale-Retail categories account for less than two percent of the system's trade centres but over 70 percent of its population. The 574 places in the bottom two functional categories account for 96 percent of the communities but only 22 percent of the population.

In Table 8, the names of the 24 communities that presently occupy the top four functional classifications are listed.

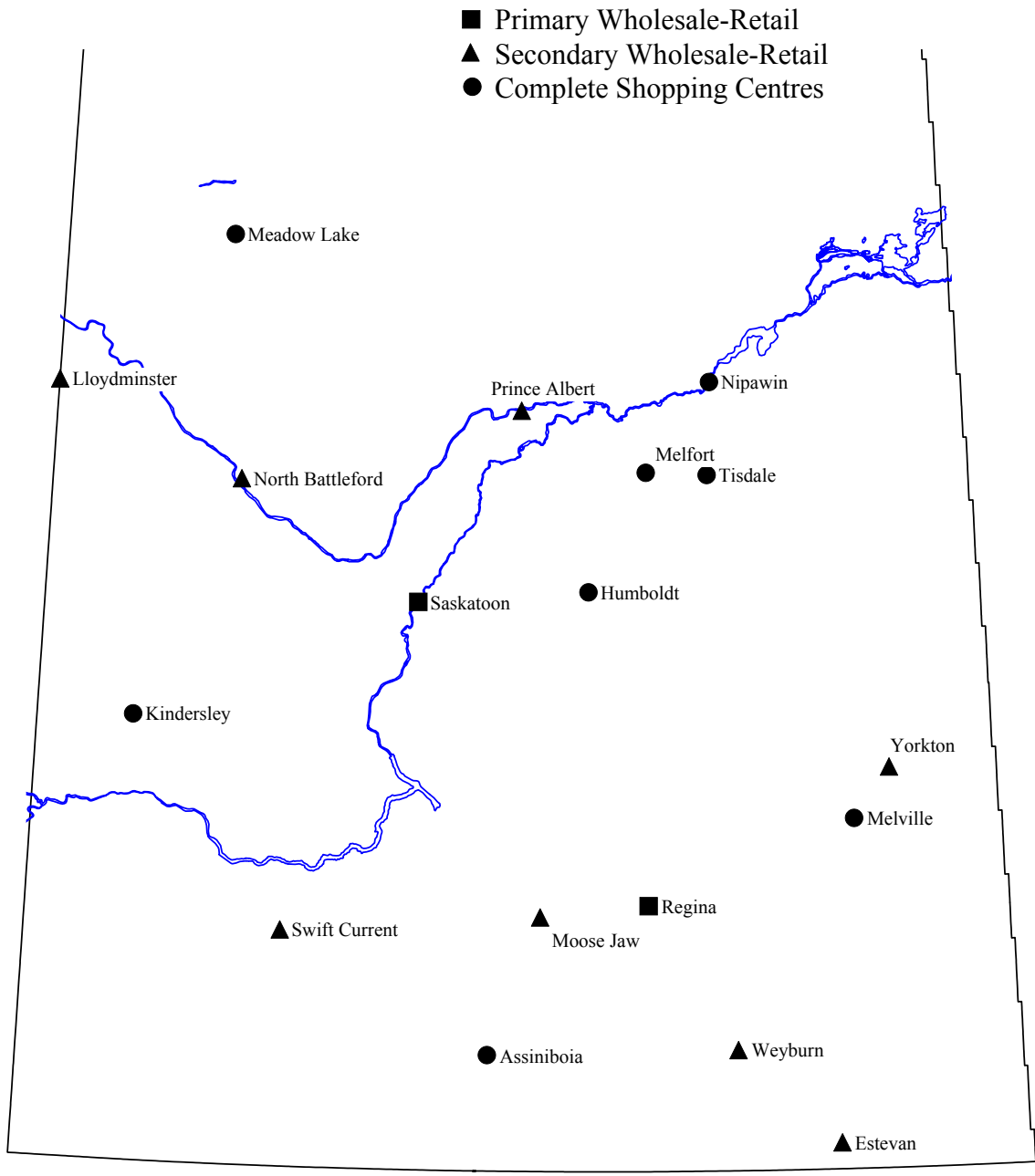


Figure 1. Saskatchewan Trade Centres by Functional Hierarchy, 2001

Table 7: Population Distribution of Saskatchewan's Trade Centre System

Functional Classification	Centres			Population		
	No.	%	cum. %	No.	%	cum. %
PWR	2	0.33	0.33	374,047	51.12	51.12
SWR	8	1.34	1.67	146,885	20.08	71.20
CSC	8	1.34	3.01	34,908	4.77	75.97
PSC	6	1.00	4.01	13,396	1.83	77.80
FCC	72	12.04	16.05	77,957	10.66	88.46
MCC	502	83.95	100	84,416	11.54	100
Total	598	100		731,609	100	

Table 8: "Top" 24 Communities in Saskatchewan, 2001

Partial Shopping Centres	Complete Shopping Centres	Secondary Wholesale-Retail	Primary Wholesale-Retail
Maple Creek Moosomin Outlook Rosetown Shaunavon Unity	Assiniboia Humboldt Kindersley Meadow Lake Melfort Melville Nipawin Tisdale	Estevan Lloydminster Moose Jaw North Battleford Prince Albert Swift Current Weyburn Yorkton	Regina Saskatoon

Discriminant Analysis: Saskatchewan

The discussion to this point has focussed on the six groups of communities identified with the cluster analysis program, and the characteristics of these groups in terms of the commercial, industrial and public functions they perform. An assessment of the grouping was subsequently performed using multiple discriminant analysis. A summary of this assessment is provided in Table 9.

The groups defined by the cluster analysis would (if shown) appear on the diagonal with values of 2, 8, 8, 6, 72 and 502 respectively. In Table 9, the group membership predicted by discriminant analysis, based on each community's scores on the five discriminant functions, are recorded. For the top four groups, the assessment is that all communities are correctly assigned. For the 72 communities assigned FCC status in the cluster analysis, 69 are validated in this classification and 3 were reassigned to MCC status. Of the 502 communities assigned as MCCs in the cluster analysis, 496 were validated while 6 were reassigned to the FCC category. Overall, 98.5 percent of the originally grouped cases were "correctly" classified.

Table 9: Saskatchewan's Discriminant Analysis Classification Results

	Group	Predicted Group Membership					Total	
		PWR	SWR	CSC	PSC	FCC	MCC	
Count	PWR	2	0	0	0	0	0	2
	SWR	0	8	0	0	0	0	8
	CSC	0	0	8	0	0	0	8
	PSC	0	0	0	6	0	0	6
	FCC	0	0	0	0	69	3	72
	MCC	0	0	0	0	6	496	502
%	PWR	100	0	0	0	0	0	100
	SWR	0	100	0	0	0	0	100
	CSC	0	0	100	0	0	0	100
	PSC	0	0	0	100	0	0	100
	FCC	0	0	0	0	95.8	4.2	100
	MCC	0	0	0	0	1.2	98.8	100

98.5% of original grouped cases correctly classified.

Actually it is not possible to improve on this classification. The communities reassigned in the discriminant analysis are positioned close to the "boundary" of the group to which they were reassigned. But if they are manually moved into the group to which reassignment is indicated, the centroids of both groups change. When the discriminant analysis is then re-run, following the suggested reassignment, a few different communities, near the new boundaries, are indicated for reclassification. All in all, the six groups of communities are very distinct. Further,

the groups are quite compact. Only 9 communities out of the 598 (1.5 percent) were close enough to the margin of an adjacent group to warrant consideration for re-classification. All of these 9 cases were in the two lowest functional categories.

CHAPTER FIVE:

MANITOBA'S TRADE CENTRE SYSTEM

The 1991 Study

A previous study of Manitoba's trade centre system was conducted in 1991 (Stabler and Olfert 1991). The data utilized for that study were the same 34 variables that formed the basis for studies of Saskatchewan's trade centre system at that time. The same methodology (cluster analysis) was also employed.

The communities chosen were all Manitoba centres with population of 50 or more in 1991. From this set, "single industry" communities and communities on Indian Reserves were excluded. The 279 communities remaining were those which could be identified as conventional trade centres. The 1991 ranking of centres by functional categories is shown in Table 10.

Table 10: Functional Classification, Manitoba Centres, 1991

Functional Classification	1991
Primary Wholesale-Retail (PWR)	1
Secondary Wholesale-Retail (SWR)	1
Complete Shopping Centre (CSC)	5
Partial Shopping Centre (PSC)	22
Full Convenience Centre (FCC)	74
<u>Minimum Convenience Centre (MCC)</u>	<u>176</u>
Total	279

The communities occupying the functional categories at the top of the system were the larger, well-known places familiar to Prairie dwellers. Winnipeg is the only Primary Wholesale-Retail centre, Brandon the only Secondary Wholesale-Retail centre. The Complete Shopping Centres in 1991 were Dauphin, Portage la Prairie, Selkirk, Steinbach, and Winkler. A complete list of communities in the top four functional categories in 1991 is shown in Table 11.

Table 11: “Top” 29 Communities in Manitoba, 1991

Partial Shopping Centres		Complete Shopping Centres	Secondary Wholesale-Retail	Primary Wholesale-Retail
Altona	Morris	Dauphin	Brandon	Winnipeg
Arborg	Neepawa	Portage la Prairie		
Ashern	Roblin	Selkirk		
Beausejour	Russell	Steinbach		
Boissevain	Shoal Lake	Winkler		
Carmen	Souris			
Gimli	Ste. Rose du Lac			
Killarney	Stonewall			
Lac du Bonnet	Swan River			
Melita	Teulon			
Morden	Virden			

Manitoba Trade Centre Classification, 2001

For the 2001 Manitoba study, all communities with 1996 populations of 50 or more were identified. From this set, all remote northern communities were excluded as were communities on Indian Reserves and those in or immediately adjacent to national or provincial parks. Those remaining were communities that were primarily conventional trade centres. The same 68 variables used for the 2001 Saskatchewan study were employed to describe Manitoba’s communities.

As with Saskatchewan, the top three levels of the 2001 classification for Manitoba is almost identical to that of 1991. Winnipeg and Brandon retain their dominant positions as the only Primary and Secondary Wholesale-Retail centres.

The Complete Shopping Centre category includes the five communities classified at this level in 1991, but there has been one addition. Morden, which was a PSC in 1991, rose to CSC status.

A major difference between the 2001 and 1991 classifications occurs at the PSC and FCC levels, as it did in Saskatchewan. While there were 22 PSCs and 74 FCCs in 1991, the 2001 classification contains only 7 PSCs and 17 FCCs. The 7 PSCs identified in 2001 were communities that were also PSCs in 1991. Of the other 22 PSCs in 1991, one rose to a CSC (Morden) while the remaining 14 were classified downward. Most of the 74 FCCs in 1991 were reclassified downward in 2001.

Although almost identical in size to 1991, the MCC category for 2001 differs significantly from that in 1991. A few communities at, or just above, 50 in population in 1991 slipped below 50 during the five year interval and were thus excluded in 2001. Primarily, however, the group is smaller because more small remote and single function communities were excluded at the outset of the 2001 study. The functional classification for 2001 is shown in Table 12.

Table 12: Functional Classification, Manitoba Centres, 2001

Functional Classification	1991
Primary Wholesale-Retail (PWR)	1
Secondary Wholesale-Retail (SWR)	1
Complete Shopping Centre (CSC)	6
Partial Shopping Centre (PSC)	7
Full Convenience Centre (FCC)	17
<u>Minimum Convenience Centre (MCC)</u>	<u>179</u>
Total	211

The overall structure of Manitoba's trade centre system and the pattern of change observed between 1991 and 2001—stability at the top and downward reclassification of middle-level communities—is consistent with the historical pattern observed over a 40 year period for Saskatchewan.

Communities in the top four functional categories in 2001 are identified in Table 13.

Table 13: “Top” 15 Communities in Manitoba, 2001

Partial Shopping Centres	Complete Shopping Centres	Secondary Wholesale-Retail	Primary Wholesale-Retail
Altona Beausejour Carmen Gimli Neepawa Swan River Virden	Dauphin Morden Portage la Prairie Selkirk Steinbach Winkler	Brandon	Winnipeg

The 2001 profiles of the six functional classifications, shown in Table 14, indicate the commercial and public service roles played by communities at each level. Winnipeg, the only PWR centre, and Brandon, the only SWR are distinguished from communities in the lower four functional categories in several ways. These two centres provide multiple outlets of a complete range of consumer and producer services. They also have a greater variety and concentration of manufacturing activity. Their health and education facilities are more numerous, larger, and more specialized.

At the top end, Winnipeg has 5 to 30 times the number of consumer and producer services of each type than Brandon, thereby offering a greater range in variety and price. The producing sector (manufacturing and construction) is, similarly, much larger with Winnipeg accounting for 62 percent of firms in Manitoba’s hierarchy in this category. Winnipeg’s health and education facilities and services are also much more numerous and varied.

Table 14: Average Number of Businesses of Various Types in Manitoba Trade Centres, 2001

Count	179	17	7	6	1	1
Functional Classification	Minimum Convenienc	Full Convenienc	Partial Shopping	Complete Shopping	Secondary Wholesale- Retail	Primary Wholesale- Retail
Population	354	1,920	3,521	10,241	42,391	640,295
All Consumer Services	16.34	78.29	153.57	298.98	1,162.00	11,536.00
Luggage Stores	-	-	-	-	<u>1.00</u>	11.00
Department Stores	0.01	0.18	0.14	0.67	<u>1.00</u>	29.00
Camera Stores	-	-	0.14	0.33	<u>3.00</u>	19.00
Shoe Stores	0.03	0.35	0.43	0.83	<u>7.00</u>	67.00
Dry Cleaning	0.01	0.12	0.29	<u>1.00</u>	1.00	33.00
Security/Commod. Brokers	0.07	0.35	0.29	<u>1.33</u>	12.00	113.00
Laundries	0.06	0.41	<u>1.14</u>	2.83	11.00	130.00
Jewelry Stores	0.02	0.47	<u>1.29</u>	2.50	6.00	83.00
Drug Stores	0.16	0.94	<u>2.00</u>	3.83	13.00	102.00
Electronics Stores	0.15	<u>1.00</u>	2.57	5.83	24.00	160.00
Lawyers	0.07	<u>1.00</u>	3.71	9.33	56.00	1,468.00
Hardware Stores	0.43	<u>1.29</u>	2.86	3.00	6.00	48.00
Credit Agencies	0.44	<u>1.35</u>	2.00	2.50	13.00	128.00
Other Food Stores	0.23	<u>1.59</u>	3.71	5.50	21.00	228.00
Furniture Stores	0.16	<u>1.71</u>	1.71	4.33	18.00	120.00
Banks or Credit Unions	0.46	<u>1.76</u>	2.86	5.33	16.00	178.00
Building Materials	0.40	<u>1.82</u>	3.57	4.17	13.00	99.00
Floor/Draperies/Appliances	0.23	<u>1.82</u>	4.43	10.33	40.00	258.00
ATMs	0.14	<u>1.82</u>	3.00	7.00	29.00	349.00
General Merchandise	0.63	<u>1.88</u>	2.14	4.33	10.00	64.00
Apparel Stores	0.16	<u>2.06</u>	3.86	7.17	53.00	456.00
Insurance Agents	0.54	<u>2.18</u>	4.43	8.00	34.00	404.00
Other Personal Services	0.34	<u>2.47</u>	5.29	9.83	31.00	362.00
Service Stations	0.94	<u>2.94</u>	5.57	8.67	23.00	206.00
Beauty/Barber Shops	0.49	<u>3.06</u>	5.86	9.83	49.00	535.00
Hotels	0.82	<u>3.12</u>	5.00	7.83	21.00	156.00
Automobile Dealers	0.70	<u>3.65</u>	9.43	19.17	52.00	313.00
Real Estate Agents	0.73	<u>3.88</u>	7.43	16.50	64.00	687.00
Recreation	<u>1.05</u>	4.12	8.71	15.17	57.00	634.00
Grocery Stores	<u>1.06</u>	3.00	5.00	11.67	34.00	459.00
Misc. Retail	<u>1.31</u>	8.24	16.86	34.67	152.00	1,218.00
Misc. Repair	<u>1.40</u>	5.71	12.71	22.50	76.00	536.00
Eating and Drinking	<u>1.51</u>	6.88	13.14	26.17	105.00	1,093.00
Auto Repair	<u>1.59</u>	7.12	12.00	26.83	110.00	790.00

All Producer Services	6.82	33.93	57.41	120.82	455.00	6,396.00
Warehousing	0.07	0.35	0.71	<u>2.33</u>	14.00	117.00
Air Transportation	-	0.65	<u>1.00</u>	2.50	1.00	49.00
Bulk Fuel	0.21	<u>1.12</u>	1.71	2.33	2.00	7.00
Communication/Utilities	0.17	<u>1.65</u>	2.14	7.33	25.00	205.00
Implement Dealers	0.40	<u>1.76</u>	3.71	5.67	16.00	31.00
Professional Business	0.41	<u>2.76</u>	3.14	19.33	72.00	1,546.00
Business Services to Primary	0.86	<u>4.59</u>	7.71	11.33	23.00	216.00
Other Business Services	<u>1.24</u>	6.41	11.43	22.67	119.00	1,605.00
Transportation	<u>1.39</u>	6.82	11.00	17.50	49.00	467.00
Other Wholesale	<u>2.07</u>	7.82	14.86	29.83	134.00	2,153.00
Grain Deliveries ¹	<u>9.60</u>	57.94	48.79	54.27	191.70	471.10
All Producers	4.80	24.66	38.28	86.84	251.00	3,817.00
Paper Manufacturing	-	0.06	-	0.50	-	<u>49.00</u>
Textiles Manufacturing	0.01	-	-	0.33	<u>1.00</u>	43.00
Leather Manufacturing	0.02	-	0.14	0.17	<u>2.00</u>	18.00
Furniture/Fixtures	0.07	0.06	-	<u>1.17</u>	1.00	95.00
Electrical Manufacturing	0.03	0.12	0.43	<u>1.17</u>	7.00	136.00
Apparel Manufacturing	0.03	0.24	0.71	<u>1.67</u>	2.00	156.00
Chem/Petro/Rubber	0.08	0.29	0.71	<u>3.17</u>	7.00	166.00
Miscellaneous Manufacturing	0.07	0.47	<u>1.00</u>	3.33	9.00	123.00
Stone/Concrete	0.11	0.53	<u>1.86</u>	1.83	3.00	54.00
Printing	0.18	0.88	<u>2.43</u>	4.00	16.00	338.00
Lumber and Wood	0.33	<u>1.12</u>	2.43	5.00	7.00	128.00
Pri. Metal/Metal Fabrication	0.14	<u>1.18</u>	1.29	3.67	11.00	218.00
Food Manufacturing	0.25	<u>2.06</u>	1.71	3.50	11.00	142.00
Machinery/Transp.	0.40	<u>2.06</u>	3.00	5.83	8.00	255.00
Construction	<u>3.08</u>	15.59	22.57	51.50	166.00	1,896.00
Clinics ²	-	-	-	-	-	-
Health Centres ²	0.04	0.06	-	0.17	-	<u>1.00</u>
Doctors	0.45	<u>3.94</u>	5.71	22.50	108.00	1,560.00
Hospital Beds	<u>2.53</u>	18.12	33.43	78.17	293.00	3,780.00
Special Care Homes	<u>5.96</u>	40.18	116.14	305.67	594.00	5,622.00
HS Enrollment	<u>28.64</u>	172.76	311.00	800.50	1,885.00	27,763.00
ES Enrollment	<u>110.95</u>	491.47	763.43	1,793.50	5,414.00	81,613.00

¹ Grain deliveries, unlike other functions in this group, refers to the volume of business rather than the number of business outlets.

² For this variable the presence or absence of the function is measured.

In distinguishing Brandon from the six communities classified as CSCs, size is, again, a major difference in everything from population through each of the service and producer categories. Brandon has approximately four times as many consumer and producer services as the average CSC. Brandon also has three times as many producers and its health and education sectors are two to five times larger than the average CSCs. It can also be noted that some consumer services and manufacturers that are found in Brandon are not common at the CSC level. The distinction among levels is indicated by the block of numbers in italics, bold and underlined that extends between the SWR and the CSC columns in Table 14, and between each other pair of columns.

Complete Shopping centres in Manitoba provide a nearly complete range of consumer services, with multiple outlets common for middle or lower order functions. CSCs are distinguished from PSCs by the presence of roughly twice as many outlets per consumer service function and by the common presence of dry cleaners and security brokers, functions that are uncommon at the PSC level. With respect to producer services, multiple outlets are again present in greater number at the CSC level. Manufacturers are more than twice as numerous in CSC communities and four types of manufacturers are common at the CSC level but not at the PSC level. Manufacturers of finished consumer goods are uncommon below the CSC level where the emphasis is on basic resource processing, fabricating and assembly type operations. Finally, health and education functions differ more in size than in presence/absence between CSCs and PSCs.

In comparing PSCs and FCCs, the greatest differences are in size and number of multiple outlets of functions common to both. There are, however, two consumer functions, laundries and

jewellery stores, common in PSCs but not in FCCs. Other differences include the presence of air transportation at the PSC level, which is not commonly available at lower levels in the hierarchy and a somewhat greater of variety of manufacturers in PSCs. The difference in health and education facilities and services is again in terms of size.

There is a very pronounced difference between FCCs and MCCs which extends across all functions. Fully 26 consumer service functions are commonly present in FCCs while only seven are found in MCCs. Manufacturing does have a limited presence in FCCs but is largely absent in MCCs, although construction firms (often craftsmen) are still available in MCCs. Finally, health care has all but disappeared at the MCC level.

A summary perspective of Manitoba's trade centre system is shown in Table 15 where the total population of the communities that are included in this analysis is allocated to the six functional levels. The statistics forcefully indicate the importance of centres in the top functional classifications.

Winnipeg alone accounts for 74 percent of the population of the trade centre system. The 8 communities in the top three functional categories account for less than four percent of centres but 86 percent of the population. The 196 communities in the lower two functional categories account for 93 percent of the centres but only 11 percent of the population.

Figure 2 shows a map of Manitoba's 2001 trade centre hierarchy. This map provides a spatial indication of the influence of Winnipeg in the Manitoba economy as well as the greater diversification of the southeastern part of the province. Most of the province's Complete Shopping Centres are clustered around Winnipeg. Only two communities in the top three functional categories, Brandon and Dauphin, are in western Manitoba.

Table 15: Population Distribution of Manitoba's Trade Centre System

Functional Classification	Number of Centres	Percent of Centres	Cumulative % of Centres	Population Total	Percent of Population	Cumulative % of Population
PWR	1	0.47	0.47	640,295	74.03	74.03
SWR	1	0.47	0.95	42,391	4.9	78.93
CSC	6	2.84	3.79	61,466	7.1	86.04
PSC	7	3.32	7.11	24,648	2.85	88.89
FCC	17	8.06	15.17	32,648	3.77	92.66
MCC	179	84.83	100	63,451	7.34	100
Total	211	100		864,879	100	

Discriminant Analysis: Manitoba

An assessment of the grouping of Manitoba's communities produced with the cluster analysis was performed using multiple discriminant analysis. In the case of Manitoba the discriminant analysis completely verified the grouping produced with the cluster analysis—i.e., 100 percent of the communities were “correctly” classified.

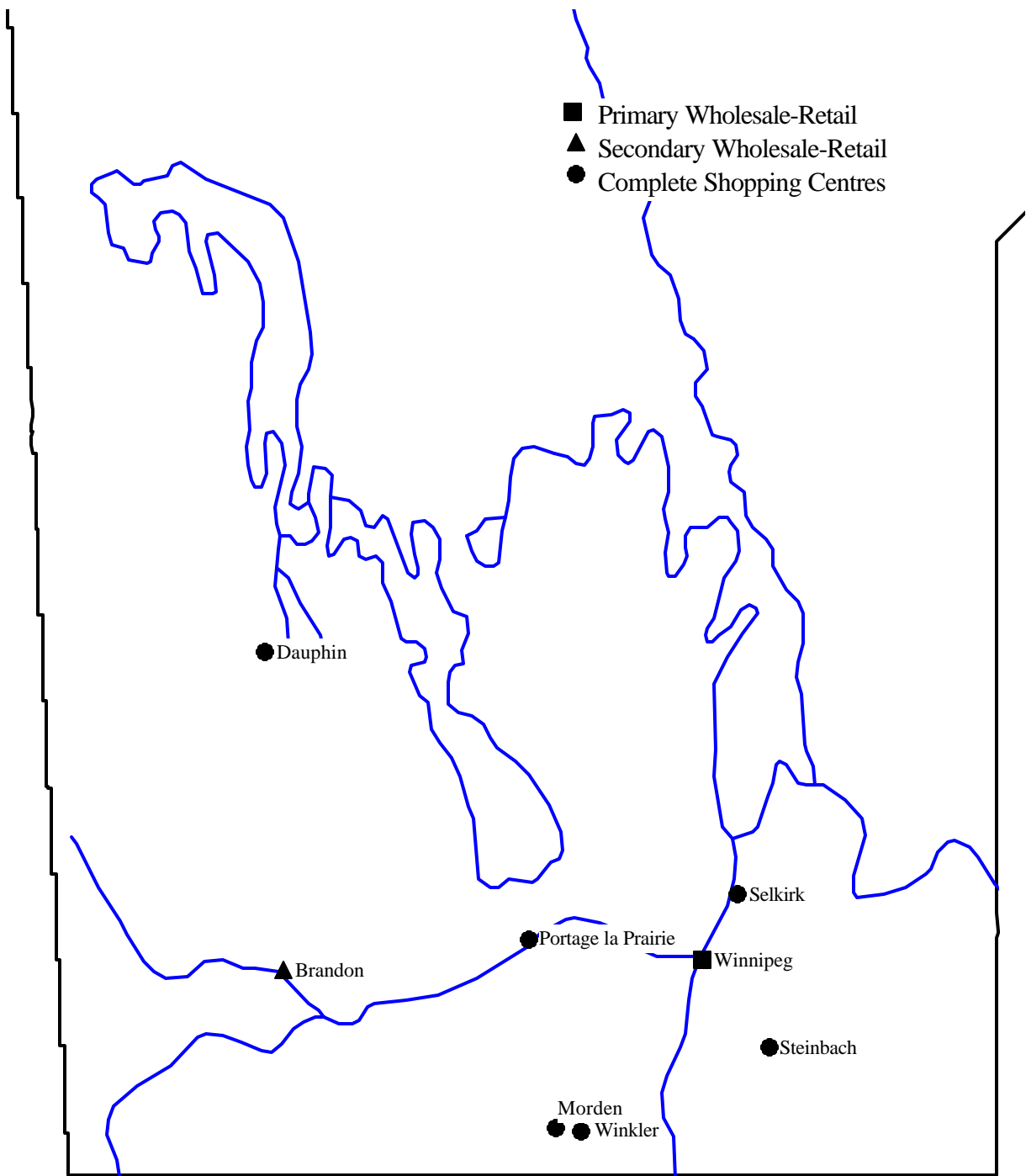


Figure 2. Manitoba Trade Centres by Functional Hierarchy, 2001

CHAPTER SIX:

ALBERTA'S TRADE CENTRE SYSTEM

The 1991 Study

A study of Alberta's trade centre system was conducted in 1991 at the same time the Manitoba study was completed (Stabler and Olfert 1991) . The data used for the Alberta study were the same 34 variables used for the study of Saskatchewan and Manitoba at that time. The same methodology (cluster analysis) was used in all three provincial studies.

The communities chosen were all Alberta centres with populations of 50 or more in 1991. From this set, "single industry" communities and communities on Indian Reserves were excluded. The 419 communities remaining were primarily those which could be identified as conventional trade centres. The 1991 ranking of centres by functional categories is shown in Table 16.

Table 16: Functional Classification, Alberta Centres, 1991

Functional Classification	1991
Primary Wholesale-Retail (PWR)	2
Secondary Wholesale-Retail (SWR)	5
Complete Shopping Centre (CSC)	12
Partial Shopping Centre (PSC)	27
Full Convenience Centre (FCC)	114
Minimum Convenience Centre (MCC)	259
Total	419

The communities occupying the functional categories at the top of the system were Alberta's two major cities and its larger regional centres. Calgary and Edmonton were both Primary Wholesale-Retail Centres. There were five Secondary Wholesale-Retail Centres: Grand Prairie, Lethbridge, Lloydminster, Medicine Hat, and Red Deer. Complete Shopping Centres included several that were stand alone communities as well as several that were actually suburbs

of larger places: Bonnyville, Brooks, Camrose, Drayton Valley, Edson, Fort Saskatchewan, Hinton, Leduc, Peace River, Rocky Mountain House, Spruce Grove, and Wetaskiwin. A complete list of the communities in the top four functional categories in 1991 is shown in Table 17.

Table 17: “Top” 46 Communities in Alberta in 1991

Partial Shopping Centres		Complete Shopping Centres	Secondary Wholesale-Retail	Primary Wholesale-Retail
Airdrie	Ponoka	Bonnyville	Grand Prairie	Calgary
Athabasca	Slave Lake	Brooks	Lethbridge	Edmonton
Barrhead	St. Paul	Camrose	Lloydminster	
Canmore	Stettler	Drayton Valley	Medicine Hat	
Cardston	Stony Plain	Edson	Red Deer	
Drumheller	Strathmore	Fort Saskatchewan		
Fairview	Sundre	Hinton		
Grand Centre	Taber	Leduc		
High Prairie	Vegreville	Peace River		
High River	Vermillion	Rocky Mt. House		
Innisfail	Wainwright	Spruce Grove		
Lacombe	Westlock	Wetaskiwin		
Lac La Biche	Whitecourt			
Okotoks				

Alberta Trade Centre Classification, 2001

For the 2001 Alberta study, all communities with 1996 populations of 50 or more were identified. From this set, all remote northern communities were removed as were communities on Indian Reserves and those in or immediately adjacent to national or provincial parks. Those remaining were primarily conventional trade centres. In addition, communities within the Edmonton and Calgary municipal components, as defined by Statistics Canada, were treated as parts of these major cities. (The names of the communities in the municipal components are

provided in Appendix 1). The same 68 variables used for the 2001 Saskatchewan and Manitoba studies were used to describe Alberta's communities. Cluster and discriminant analyses were used to group centres into functional classifications.

All of the Alberta communities that were classified as Primary or Secondary Wholesale-Retail centres in 1991 retained that classification in 2001. Nor were there any additions to either group. Of the 12 CSCs in 1991, three (Fort Saskatchewan, Leduc, and Spruce Grove) were included with Edmonton when that city and its municipal components were treated as a single entity in the 2001 study. Of the remaining 9 CSCs in 1991, five retained their status (Brooks, Camrose, Drayton Valley, Peace River, and Wetaskiwin). Four of the nine were reclassified to Partial Shopping Centre status: Bonnyville, Edson, Hinton, and Rocky Mt. House; and four places classified as PSCs in 1991 moved up to CSC status in 2001: High River, Lacombe, Ponoka, and Whitecourt. Thus there was marked stability at the upper level of the hierarchy between 1991 and 2001, though there was greater movement into and out of the CSC category in Alberta than in either of the other two provinces.

There were 27 PSCs in 1991 and 27 in 2001 with considerable overlap in the membership at the two dates. The MCC classification included 259 communities in 1991 and 225 in 2001. A few communities slipped from over 50 to under 50 population between studies, some were included in the aggregation of the Calgary and Edmonton municipal components, and a large number of remote and single function communities were excluded at the outset of the 2001 study. Consequently the MCC category is smaller and not directly comparable to the 1991 group of MCCs. The functional classification for 2001 is shown in Table 18.

Table 18: Functional Classification, Alberta Centres, 2001

Functional Classification	2001
Primary Wholesale-Retail (PWR)	2
Secondary Wholesale-Retail (SWR)	5
Complete Shopping Centre (CSC)	9
Partial Shopping Centre (PSC)	27
Full Convenience Centre (FCC)	29
<u>Minimum Convenience Centre (MCC)</u>	<u>225</u>
Total	297

The 2001 structure of Alberta's trade centre system is similar to those of Saskatchewan and Manitoba with a small number of large and growing communities in the top three functional categories. Stability in number of communities at the PSC level characterized Alberta's system whereas this category lost numbers in both Saskatchewan and Manitoba during the 1990s. The major change in the Alberta system occurred at the FCC level where the number of centres decreased from 114 in 1991 to 29 in 2001. Thus the same pattern of downward filtering experienced by the other two provinces occurred in Alberta but at a lower level. Communities in the top four functional categories in 2001 are identified in Table 19.

The 2001 profiles of the six functional categories, shown in Table 20, indicates the commercial and public service roles played by communities at each level.

At the PWR level, Calgary and Edmonton are truly dominant cities. With an average of 15,000 consumer service outlets each, they substantially exceed Winnipeg's 11,500 and dwarf Saskatoon and Regina which have an average of 3,200 each. Calgary and Edmonton surpass the other Prairie PWR centres in all other categories by equally impressive margins.

Table 19: “Top” 43 Communities in Alberta in 2001

Partial Shopping Centres		Complete Shopping Centres	Secondary Wholesale-Retail	Primary Wholesale-Retail
Athabasca	Lac La Biche	Brooks	Grand Prairie	Calgary
Barrhead	Olds	Camrose	Lethbridge	Edmonton
Bonnyville	Pincher Creek	Drayton Valley	Lloydminster	
Bow Island	Rocky Mt. House	High River	Medicine Hat	
Cardston	Slave Lake	Lacombe	Red Deer	
Claresholm	St. Paul	Peace River		
Coaldale	Stettler	Ponoka		
Cold Lake	Strathmore	Wetaskiwin		
Edson	Sundre	Whitecourt		
Hanna	Taber			
High Level	Vegreville			
High Prairie	Vermillion			
Hinton	Westlock			
Innisfail				

Alberta’s SWR centres are large, viable communities which offer multiple outlets of all consumer services and are well represented in terms of producer services, producers and health and education facilities and services. Alberta’s SWR centres are, on average, more than twice the size of Saskatchewan’s communities in the same functional category. On the other hand, Brandon, Manitoba’s only SWR centre, compares reasonable well with Alberta’s secondary cities. Calgary and Edmonton are roughly 15-20 times larger in all dimensions than the SWR centres.

The Complete Shopping centre category includes 9 Alberta communities which offer one to three outlets of the higher order consumer services and larger multiples of middle- and lower-order consumer functions. They also offer a full range of producer services although only one to three outlets of some types of services. Alberta’s CSCs have an average of 32 manufacturing firms, concentrated in the processing and fabricating sub-sectors. Most health and education facilities and services are also available in these communities.

Table 20: Average Number of Businesses of Various Types in Alberta Trade Centres, 2001

Count	225	29	27	9	5	2
Functional Classification	Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale-Retail	Primary Wholesale-Retail
Population	414	2,261	4,802	8,501	44,822	773,352
All Consumer Services	10.70	72.00	173.13	295.99	1,194.20	15,005.00
Luggage	-	-	0.14	0.22	<u>1.40</u>	37.50
Camera Stores	-	0.07	0.29	<u>1.00</u>	1.60	26.00
Dry Cleaning	-	0.21	0.57	<u>1.33</u>	3.80	91.50
Security/Commod. Brokers	0.02	0.24	0.46	<u>1.33</u>	8.40	157.00
Department Stores	0.02	0.41	0.71	<u>2.11</u>	5.00	32.00
Furniture	0.07	0.59	1.86	<u>4.00</u>	16.40	158.00
Credit Agencies	0.08	0.83	<u>1.18</u>	2.33	13.60	161.50
Jewelry	0.03	0.38	<u>1.32</u>	2.00	7.40	106.00
Shoe Stores	0.08	0.52	<u>1.79</u>	2.78	10.20	89.50
Laundries	0.06	0.59	<u>1.89</u>	2.78	14.00	131.00
Computers/Ent.	0.03	<u>1.07</u>	2.79	5.56	19.60	179.50
Lawyers	0.06	<u>1.14</u>	4.64	11.11	78.00	2,847.00
General Merchandise	0.27	<u>1.28</u>	2.29	3.11	6.80	74.50
Other Food Stores	0.19	<u>1.34</u>	2.61	4.44	22.60	266.00
Lumber and Bldg. Mat.	0.22	<u>1.41</u>	2.86	4.44	16.60	136.50
Apparel	0.12	<u>1.41</u>	5.39	10.22	50.40	494.50
Other Personal Services	0.16	<u>1.48</u>	3.96	6.56	37.60	340.50
Drug Stores	0.16	<u>1.52</u>	2.71	4.00	11.60	177.50
ATM's	0.25	<u>1.59</u>	4.25	7.78	26.60	373.50
Hardware	0.28	<u>1.59</u>	2.25	3.00	5.80	60.00
Banks	0.29	<u>1.59</u>	3.11	5.56	17.00	193.00
Floor/Draperies/Appliances	0.14	<u>1.83</u>	5.64	7.89	37.60	347.00
Insurance	0.35	<u>1.93</u>	4.00	6.33	31.20	424.50
Beauty/Barber Shops	0.24	<u>2.38</u>	5.89	9.11	42.80	432.50
Service Stations	0.52	<u>2.59</u>	6.54	6.67	24.80	221.50
Recreation	0.58	<u>2.97</u>	7.14	11.67	55.40	604.00
Grocery Stores	0.81	<u>3.38</u>	6.79	9.89	33.40	472.50
Hotels	0.75	<u>3.76</u>	7.43	10.44	27.20	173.50
Automobile Dealers	0.45	<u>4.21</u>	10.07	18.56	53.40	414.50
Misc. Repair	0.72	<u>4.24</u>	12.96	20.44	77.80	789.50
Real Estate	0.87	<u>4.59</u>	10.07	14.22	73.40	877.50
Auto Repair	0.85	<u>6.24</u>	13.96	28.11	93.20	975.00
Misc. Retail	0.99	<u>6.69</u>	19.46	38.78	149.80	1,558.50
Eating and Drinking	<u>1.04</u>	7.93	16.11	28.22	119.80	1,582.00

All Producer Services	7.80	43.56	86.16	162.00	642.80	10,179.00
Air Transportation	0.03	0.14	<u>0.89</u>	1.33	4.60	74.00
Warehousing	0.29	0.62	<u>1.07</u>	2.11	10.60	133.00
Bulk Fuel	0.19	<u>0.93</u>	1.50	2.56	3.40	13.50
Implement Dealers	0.30	<u>1.21</u>	2.57	3.44	11.60	36.00
Comm/Util.	0.28	<u>2.24</u>	4.07	6.22	23.40	349.00
Professional Bus. Services	0.38	<u>2.76</u>	8.25	15.22	86.60	2,126.50
Other Business Services	<u>0.91</u>	5.38	13.46	27.89	133.80	2,075.00
Other Wholesale	<u>1.52</u>	8.93	17.07	30.78	174.60	2,992.50
Transportation	<u>1.73</u>	9.38	16.39	26.56	71.60	783.50
Services to Primary	<u>2.17</u>	11.97	20.89	45.89	122.60	1,596.00
Grain Deliveries ¹	<u>18.38</u>	48.09	43.14	31.22	124.58	468.00
All Producers	4.42	23.91	57.14	97.44	401.00	5,647.00
Textiles MFG	0.01	0.03	0.07	0.22	0.80	<u>31.50</u>
Paper	0.01	0.07	0.21	0.56	0.80	<u>37.00</u>
Leather MFG	0.02	0.07	0.21	0.33	1.20	16.50
Apparel MFG	0.04	0.17	0.18	0.67	<u>3.80</u>	104.50
Electrical/Instruments	0.05	0.24	0.29	0.89	<u>6.20</u>	231.50
Furniture/Fixtures MFG	0.05	0.10	0.39	<u>1.22</u>	4.00	94.50
Misc. MFG	0.04	0.52	0.82	<u>2.89</u>	11.60	172.00
Stone/Concrete	0.07	0.34	<u>0.93</u>	2.44	8.20	99.00
Chem/Petro/Rubber	0.10	0.34	<u>0.93</u>	2.67	11.00	268.00
Pri. Metal/Metal Fab.	0.06	0.41	<u>1.39</u>	3.11	15.00	372.50
Machinery/Transp.	0.25	<u>1.10</u>	2.11	5.00	27.60	414.50
Lumber and Wood	0.28	<u>1.14</u>	3.79	6.22	11.00	181.00
Food MFG	0.22	<u>1.21</u>	1.54	3.00	16.00	157.00
Printing	0.12	<u>1.31</u>	2.07	4.00	12.80	354.50
Construction	<u>3.10</u>	16.86	42.21	64.22	271.00	3,113.50
Clinics ²	0.04	0.48	0.29	0.56	0.40	<u>1.00</u>
Health Centers ²	0.10	0.38	0.75	0.56	<u>1.00</u>	1.00
Doctors	0.26	<u>3.52</u>	9.11	19.67	105.20	2,146.00
Hospital Beds	0.62	<u>14.31</u>	29.11	82.00	653.40	2,296.00
Special Care Homes	<u>3.11</u>	31.69	57.36	95.11	441.60	4,434.00
HS Enrollment	<u>36.36</u>	191.21	615.93	762.22	2,847.00	44,514.50
ES Enrollment	<u>153.40</u>	583.00	1,480.64	2,106.44	7,650.60	124,919.00

¹ Grain deliveries, unlike other functions in this group, refers to the volume of business rather than the number of business outlets.

² For this variable the presence or absence of the function is measured.

Alberta's and Manitoba's CSCs are generally similar in size and functional structure and both are more than double the size of Saskatchewan's CSCs.

CSCs in Alberta are distinguished from PSCs by the presence of four higher order consumer functions which are not routinely available at the PSC level (identified by the underlined, bold, and italicized entries in Table 20) and by up to twice as many outlets per community of middle and low order consumer functions. In terms of producer services, the distinction is more in number of outlets per function than availability. PSC communities have on average 15 manufacturing firms while CSCs have over 30. PSC communities, like most categories below the SWR level, concentrate on processing and fabricating. The number of doctors, hospital beds and special care beds are between one-third and one-half those of CSC communities.

PSCs in Alberta are communities with an average population of 4,802 people, about one-third larger than PSCs in Manitoba and 10 percent larger than Saskatchewan's Complete Shopping Centres which have average populations of 4,364. PSCs are distinguished from FCCs in Alberta by the presence of five upper to middle order consumer functions not routinely present at the FCC level. Larger multiples of middle and lower order functions are also present in the PSCs. Air transportation is available in most PSCs but not at lower levels in the hierarchy and, again, there are twice as many producer service firms in PSCs for functions common at both levels. On average there are 7 manufacturing firms per FCC community but 15 in the PSCs. Finally, the number of doctors and health care facilities are much reduced at the FCC level compared with communities in all higher functional categories.

Comparing FCCs and MCCs, the former are distinguished by the presence of 20 middle and higher order consumer functions not systematically available at the MCC level. While there are, on average, 11 consumer outlets present in each MCC community, they consist of an eclectic combination of functions that varies from one place to the next. A small, eclectic combination of producer services, a single manufacturing plant, an elementary school, and virtually no health care facilities completes the profile of Alberta's MCC communities.

A summary perspective on Alberta's trade centre system is provided in Table 21 where the total populations of the communities that are included in the hierarchy are allocated to the six functional levels. As in Manitoba and Saskatchewan, a small number of centres in the top functional classifications account for most of the population of the trade centre system. In Alberta, the seven communities in the PWR and SWR categories account for 83 percent of the total, reflecting a greater concentration than either Manitoba (79 percent) or Saskatchewan (71 percent) in the top two classifications. The remaining 290 communities account for 97.65 percent of all centres but only 17 percent of the hierarchy's population. The lowest two categories account for 86 percent of the communities but only 7.43 percent of the population.

In Figure 3 a map of Alberta's trade centre system is shown for 2001. The map provides a spatial indication of the more diversified nature of the economy of western Alberta as well as the influence of Calgary and Edmonton. Only five communities in the top three functional categories are outside the "corridor" from Lethbridge through Calgary, Red Deer, Edmonton, and Whitecourt.

Table 21: Population Distribution of Alberta's Trade Centre System

Functional Classification	Number of Centres	Percent of Centres	Cumulative % of Centres	Population Total	Percent of Population	Cumulative % of Population
PWR	2	0.67	0.67	1,546,703	72.42	72.42
SWR	5	1.68	2.35	224,108	10.49	82.91
CSC	9	3.03	5.38	76,508	3.58	86.49
PSC	27	9.09	14.47	129,662	6.10	92.59
FCC	29	9.76	24.23	65,560	3.07	95.66
MCC	225	75.76	100.00	93,141	4.36	100.00
Total	297	100		2,135,682	100	

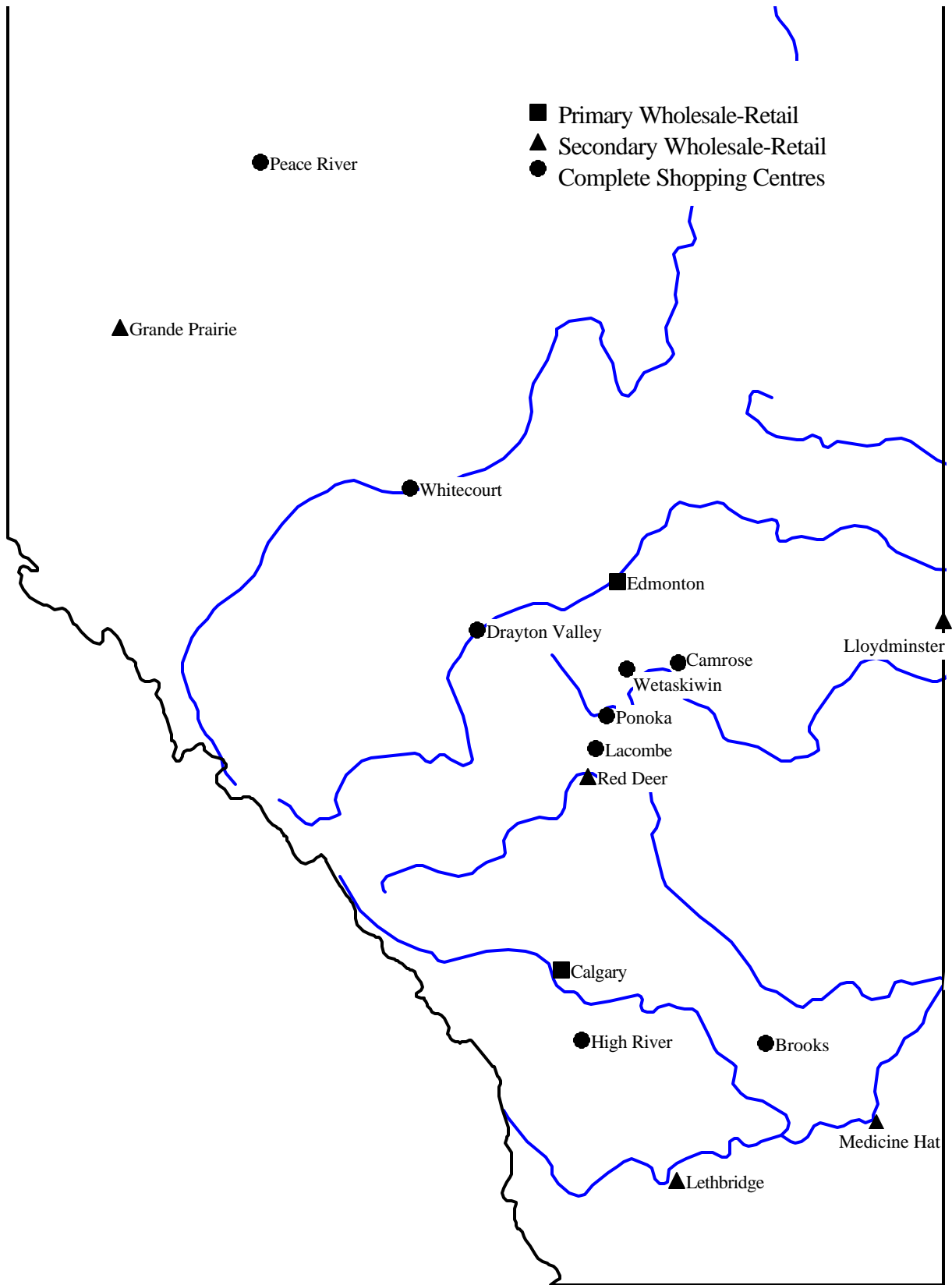


Figure 3. Alberta Trade Centres by Functional Hierarchy, 2001

Discriminant Analysis: Alberta

An assessment of the grouping of Alberta’s communities produced with the cluster analysis was performed using multiple discriminant analysis. A summary of this assessment is provided in Table 22.

Table 22: Alberta Discriminant Analysis Classification Results

		Predicted Group Membership						Total
	Group	PWR	SWR	CSC	PSC	FCC	MCC	
Count	PWR	2	0	0	0	0	0	2
	SWR	0	5	0	0	0	0	5
	CSC	0	0	9	0	0	0	9
	PSC	0	0	0	27	0	0	27
	FCC	0	0	0	0	28	1	29
	MCC	0	0	0	0	5	220	225
%	PWR	100	0	0	0	0	0	100
	SWR	0	100	0	0	0	0	100
	CSC	0	0	100	0	0	0	100
	PSC	0	0	0	100	0	0	100
	FCC	0	0	0	0	96.6	3.4	100
	MCC	0	0	0	0	2.2	97.8	100

98.0% of original grouped cases correctly classified

The groups defined by the cluster analysis would (if shown) appear on the diagonal with values of 2, 5, 9, 27, 29, and 225 respectively. In Table 22, the group membership predicted by the discriminant analysis, based on each community’s scores on the five discriminant functions, are recorded. For the top four groups, the assessment is that all communities are “correctly” assigned. For the 29 communities assigned FCC status with the cluster analysis, 28 are validated and one was reassigned to MCC status. Of the 225 communities assigned as MCCs in the cluster analysis, 220 are validated while five were reassigned to the FCC category. Overall, 98.0 percent of the originally grouped cases were “correctly” classified.

Actually, it is not possible to improve on this classification. The communities reassigned in the discriminant analysis are positioned close to the “boundary” of the group to which they were reassigned. But if they are manually moved into the group to which reassignment is indicated, the centroid of both groups changes. When the discriminant analysis is then re-run, following the suggested reassignment, a few different communities, near the new boundaries, are indicated for reclassification.

As with the other two provinces, the six groups are very distinct. The groups are also very compact. Only six communities out of 297 (2.0 percent) were close enough to the margin of an adjacent group to warrant consideration for reclassification. All of these six cases were in the lowest two functional categories.

CHAPTER SEVEN: CONCLUSIONS

The structure of the trade centre systems in each of the Prairie provinces is generally similar with a small number of large communities dominating each system, a somewhat larger number of medium-sized rural towns occupying mid-level classifications, and the preponderance of the remaining communities in the lowest two functional categories.

The information provided in Table 23 reveals the high degree of population concentration in the Prairie region's major cities. Although Winnipeg contains a larger fraction of that province's trade centre population than does any other single Prairie city, Alberta's population is actually more concentrated than Manitoba's at the PWR/SWR level. A higher percentage of Alberta's trade centre population lives in PWR and SWR centres than is the case in any other province. Saskatchewan's population is the least concentrated although even there over 70 percent of its trade centre population lives in PWR and SWR communities.

Table 23: Concentration of Population in the Prairie Trade Centre Systems, 2001

Functional Classification	Saskatchewan		Manitoba		Alberta	
	Centres %	Pop. %	Centres %	Pop. %	Centres %	Pop. %
PWR & SWR	1.67	71.20	0.95	78.93	2.35	82.91
CSC & PSC	2.34	6.60	6.16	9.95	12.12	9.68
FCC & MCC	95.98	22.20	92.89	11.11	85.52	7.43

There are other differences among the provinces as well. A comparison of the three trade centre maps (Figures 1 through 3) reveals a thin but more or less evenly distributed set of communities in the top three functional classifications across all of Saskatchewan. A similar pattern characterizes eastern Alberta and western Manitoba. However, a more closely packed

pattern of communities is found in southeastern Manitoba as well as in the “corridor” between Lethbridge and Edmonton in Alberta. A more diversified agricultural base, a higher population density and a greater concentration of rural manufacturing activity is found in these geographic extremities of the Prairie region. Thus there are more communities and they are closer to one another.

When the commercial structure of communities at each functional level is compared across the three provinces, as in Table 24, there are again some distinct differences. Calgary and Edmonton are clearly the dominant cities of the Prairie region. The average population of these two cities exceeds Winnipeg’s by 20 percent but they each have 30 percent more consumer services and 50 percent more producers and producer services than Winnipeg. Calgary and Edmonton are over four times the size of Saskatoon and Regina and have five to six times as many consumer and producer services and producers.

Some other comparisons are not as dramatic. For all other functional categories, Manitoba’s and Alberta’s communities are roughly the same size and have comparable numbers of consumer services. Alberta communities have the advantage in producers and producer services at most levels, however. The greatest difference between Manitoba and Alberta communities occurs at the PSC level where Alberta centres are over one-third larger and have a much greater complement of producers and services of all types.

Saskatchewan’s communities are smaller than those in either Manitoba or Alberta at each level and have many fewer commercial functions of all types. In a couple of instances, Saskatchewan’s communities up one level from Alberta’s are about the same size. For example, Saskatchewan’s PSCs with a population average of 2,233 are about the same size as Alberta’s FCCs with 2,261. In this comparison, Saskatchewan’s centres have 40 percent more consumer

Table 24: Summary Comparisons of Trade Centre Characteristics, Prairie Provinces, 2001

	MCC			FCC			PSC		
	SK	MB	AB	SK	MB	AB	SK	MB	AB
Pop.	168	354	413	1,083	1,920	2,261	2,233	3,521	4,802
CS	5.7	16.3	10.7	36.9	78.3	72.0	101.8	153.6	173.1
PS	2.1	6.8	7.8	13.1	33.9	43.6	30.5	57.4	86.2
P	1.0	4.8	4.4	8.0	24.7	23.9	17.7	38.3	57.1

	CSC			SWR			PWR		
	SK	MB	AB	SK	MB	AB	SK	MB	AB
Pop.	4,364	10,241	8,501	18,361	42,391	44,822	187,024	640,295	773,352
CS	131.6	299.0	296.0	392.6	1,162.0	1,194.2	3,181.5	11,536.0	15,005.0
PS	38.9	120.8	162.0	153.8	455.0	642.8	1,688.5	6,396.0	10,179.0
P	30.0	86.8	96.7	97.3	251.0	399.4	994.5	3,817.0	5,579.0

services outlets, slightly more producers, but 40 percent fewer producer services. In another comparison, Saskatchewan's CSCs with an average population of 4,364 are close to the average size of Alberta's PSCs with 4,802. Alberta's PSCs have 30 percent more consumer services, however, and over twice as many producer services and nearly twice as many producers as Saskatchewan's CSCs. In all three provinces health care facilities are concentrated in the top three functional levels, selectively available in PSCs and FCCs, and absent at the MCC level.

One aspect of the trade centre evolution of the past several decades that has been common to each of the Prairie provinces has been the emergence of a spatial pattern in which locally dominant communities have emerged to serve reasonably large rural areas. These communities are the SWRs and CSCs identified on Figures 1 through 3.

The spacing of communities at each functional level reflects population density, the number of centres in that functional category, and distance from communities at the next highest functional level. Thus the Prairie region's five PWR centres are well separated from one another and are in approximately the centre of the most populous areas in each province. The Prairie's 14 Secondary Wholesale-Retail centres are spaced well away from the major cities in most cases and are interspersed at strategic intervals, in essence filling in the spaces, between the PWR cities. In a similar manner, the 23 Complete Shopping Centres fill in the spaces between SWR centres and between PWR and SWR centres. Most residents of the Prairie provinces live within the retail market areas of the communities in the top three levels of the trade centre hierarchy. More thinly populated areas such as east-central Alberta, southwest Saskatchewan and western Manitoba are served by Partial Shopping Centres such as Drumheller, Maple Creek and Virden.

The trading areas defined above for the top three functional categories also provide an insight into the framework within which the one thousand plus communities in the FCC and MCC classifications operate. Retail trade areas of PWR, SWR and CSC communities cover virtually the entire agricultural area of the Prairie region. All, or nearly all, FCC and MCC centres lie within the market area of one or more of these larger communities, which offer a greater range and variety of consumer services, producer services, and public infrastructure.

While prospects for growth of communities in the MCC category are not promising, the 82 centres in the top four functional categories are definitely in a much better position to take advantage of any growth that does occur in the Prairie region. Some of the Full Convenience Centres, especially in Alberta, are also capable of supporting certain types of increased activity, particularly of the variety that could benefit from lower land costs and which do not rely on urban service industry support.

All of the communities in the top four functional categories should be thought of as viable centres. They are also the logical locations from which to launch any rural development initiatives. These communities clearly have important roles to play in the future of the Prairie economy.

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APPENDIX 1: COMMUNITIES COMBINED INTO MUNICIPAL COMPONENTS¹

Edmonton:

Beaumont, Bon Accord, Bow Mart, Bruderheim, Calmar, Devon, Edmonton, Entwistle, Fort Saskatchewan, Gibbons, Leduc, Legal, Morinville, New Sarepta, Redwater, St. Albert, Spruce Grove, Stony Plain, Thorsby, Wabamun, and Warburg.

Calgary:

Airdrie, Beiseker, Calgary, Chestermere, Cochrane, Crossfield, Irricana, Okotoks*

Medicine Hat:

Medicine Hat and Red Cliff*

¹ The rural space and summer villages included in the municipal districts are not listed as they were not part of the present study.

*These two communities were combined in the cluster analysis and are not part of Statistics Canada's aggregations.