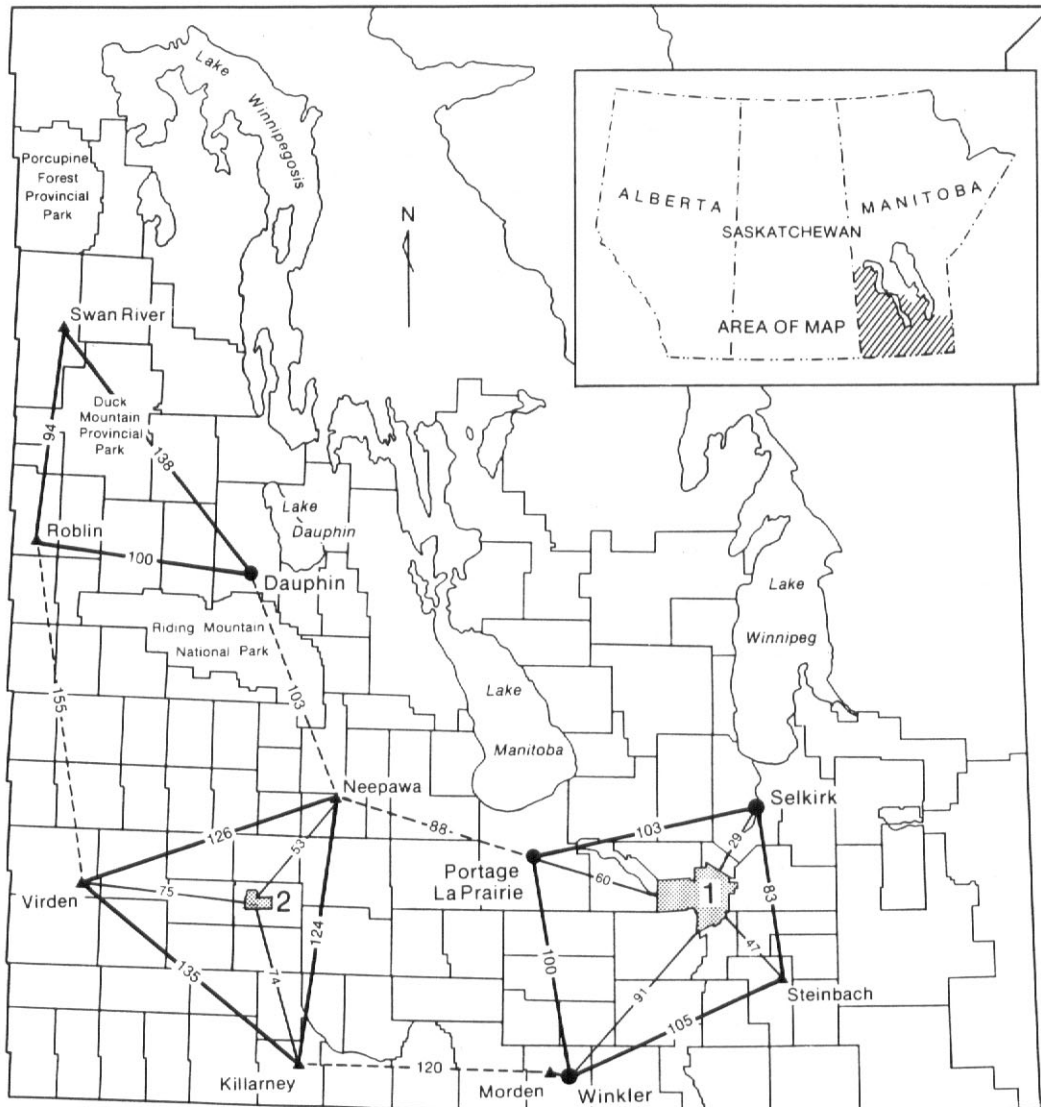


The Internal and Functional Restructuring of Rural Communities in Agro-Manitoba



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**THE INTERNAL AND FUNCTIONAL
RESTRUCTURING OF RURAL COMMUNITIES
IN AGRO-MANITOBA**

by

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**Prepared for and funded by
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by

**The Rural Development Institute
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The views contained herein are those of the authors and do not necessarily represent the views of the Province.

PREFACE

Rural depopulation has occurred primarily because of the restructuring of agriculture. Fewer, larger farms and attendant technology have eliminated not only the need for a high number of farmers, but also the rural farm labour market. As people left the land, some moved to large metropolitan areas and some settled in smaller rural villages and towns. Serving primarily as market centres, it is expected that the smaller centres would suffer as the surrounding population decreased. Also, improvements in vehicles and the network of roads and highways shortened the time-distance relationships of rural areas and allowed residents to expand their trading patterns to alternative communities.

The changing relationships between rural residents and their traditional trade centres necessarily results in changes both within and among the communities themselves. This report looks at both the internal restructuring of businesses and services through time within agro-Manitoba's trade centres, and the restructuring of the trade centre network itself.

This project has a long history. Initiated originally as one of five "investigations" into rural conditions and trends, the original report raised more questions than it answered. Consequently, the effort was expanded to concentrate on changes in the internal structure of communities. This effort was hindered by a lack of consistent reliable data over time, and by discrepancies among data sources. The internal restructuring of communities is reported herein, with the above reservations noted. Because internal community change is a response to a given centres "functions" within the network of all trade centres, it was necessary to evaluate the restructuring of that network. In total, therefore, this is an initial look at Manitoba's trade centres between 1961 and 1991.

We acknowledge the on-going support of the Manitoba Department of Rural Development. The Honourable Len Derkach, Minister, Winston Hodgins, Deputy Minister, and Ron Riopka and Bob Grodzik supported RDI during the study. Patrick Cherneski completed the cartography for the report, and Joan Rollheiser, Administrative Assistant of RDI, prepared the manuscript for publication. A special thank you is extended to Dr. Jack Stabler, Head of the Department of Agricultural Economics at the University of Saskatchewan for working as a partner on community studies and sharing his experience in both Saskatchewan and Manitoba.

EXECUTIVE SUMMARY

The objectives of this report are to present and analyze available information on the changes that are occurring in the trade centre functions both within and among Manitoba's cities, towns and villages. Internal restructuring of the number and types of business and services are reviewed to examine the changes occurring in different sizes of communities and in different regions. Central place analysis was employed to assess the restructuring of functional roles among trade centres in the Province.

Community profiles were used to ascertain the numbers and types of businesses in 41 cities, towns and villages in 1966 and 1986. Over the 20 year period, notable increases occurred in 5 categories (auto repair, home furnishing stores, clothing stores, restaurants and professional services), and significant decrease occurred in 3 categories (auto sales dealerships, bulk fuel outlets and agricultural implement dealerships).

Population increased by 18 percent overall in the 41 communities, but rural populations decreased in all areas except the Winnipeg region. A strong relationship exists between numbers of businesses and populations of the trade centres, suggesting an increasing role of all communities as "market centres" for their hinterlands. The smallest centres show the greatest variation in numbers of services related to size of community, and the variability has increased through time. The relationship between change in population and changes in numbers of businesses is weak, suggesting that change is occurring that relates to factors other than just the population of the centre.

The fact that the percentage of seniors is increasing in most rural communities has had no apparent effect on either the types or number of businesses.

Central place analysis shows long-term stability in the higher-order functional classes. Winnipeg has always been the Province's only primary wholesale-retail centre, and Brandon is its only secondary wholesale-retail centre. In 1966, Dauphin and Portage la Prairie were the only complete shopping centres, but Selkirk and Winkler moved up to the third-order level in 1986. Fourth-order (partial shopping centres) communities numbered 3 in 1966 and 7 in 1986. Very few centres, therefore, provide higher-order functions to agro-Manitoba. The vast majority of places serve only as "convenience centres".

Central-place analysis using a different data base was applied in 1991 to 279 Manitoba communities. Owing to the fact that this analytical technique sorts places into levels relative to all places involved, many changes occurred in the lower level designations. Winnipeg and Brandon retained singular status within their first and second level functions, and only one additional centre, Steinbach, moved into the complete shopping centre category. A major reshuffling occurs in the fourth, fifth and sixth levels (smaller communities with fewer functions). Differences between 1966 and 1986, and 1991 classifications, however, are based on additions and single class movements, and are not inconsistent.

In combination with an earlier study that compared 1961 and 1971, the 1966, 1986 and 1991 analyses all indicate stability in major centres, with upward movement occurring only in the Winnipeg-Red River region. Most small rural places continue to degrade, and regional centres are evolving at the shopping centre levels. Significant variation in evolution of the community hierarchy is apparent among regions in agro-Manitoba.

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RURAL COMMUNITIES ON THE CANADIAN PRAIRIES

The southern portions of the Canadian prairie provinces support extensive agricultural production on a broad scale. The restructuring of agriculture since the peak population of farmers occurred in 1936 has resulted in rural depopulation as changes in production, transportation and distribution technologies reduced the need for labour.

The rural communities that formed to serve the farming population were foci of interpersonal relationships, and centres of trade, commerce, industry, manufacturing, transportation and communication (Sarbit and Greer-Wooten, 1980). The same forces that caused restructuring on farms created change in rural communities. As rural populations began to decrease, the services provided by the myriad of small communities across the Prairies began to centralize, and the smaller communities lost commercial and service functions. Ninety percent of the more than 1000 centres in the three provinces have fewer than 2,000 residents (Stabler, 1992).

The Report of the Commission on Targets for Economic Development made the following statement in 1969 (TED Report 1969:435):

Roughly half of the people in the rural regions of Manitoba are living within a framework that is obsolete - in outdated incorporated or rural service centres, in outdated rural municipal structures or on outdated farms ... Nowhere has the process of adjustment been more severe than in the case of rural service centres ... The existing system of service centres is expensive to maintain and cannot provide either the level of service or the type of living appropriate to the latter half of the twentieth century.

The Manitoba Development Fund (MDF) injected risk capital to small businesses with expansion plans, and to new businesses, between 1958-1966. In 1970, Chorney reported that the MDF had at best stabilized rural economies. No growth was evident, especially relative to other provinces. On the Prairie provinces level, Stabler and Olfert (1992:2) state that among smaller centres, "... approximately 70 percent of the communities in the Prairie region no longer play any systematic role in the trade centre network."

The significance of gaining an understanding of both the internal restructuring and changing relationships among Manitoba's rural communities lies in the fact that a healthy farm economy requires a healthy system of servicentres. Both are needed to create a viable rural economy. Whereas the currently faltering farm economy is expected to recover through diversification and international negotiation, rural communities will not necessarily follow suit. Although low commodity prices have created difficulties for rural communities, they have not caused the restructuring that is occurring. Accordingly, an increase in commodity prices would not rejuvenate those communities that have lost their trade and service functions (Stabler and Olfert, 1992). In essence, it is unlikely that the Prairies will ever return to many small viable farms served by many small viable communities.

There is, however, a need for a system of viable rural communities that efficiently serve reduced rural populations. Although distributed differently from original settlement patterns, the network of servicentres must provide essential human and commercial services. The evolving network will respond to the density of population and the time-space frame that rural residents can use effectively. Sustainable communities within a viable network will help maintain healthy rural economies.

The relationship between rural communities and farms also is changing owing to labour market changes. Although off-farm employment has involved between 30 and 40 percent of farm operations for 50 years (Fuller and Bollman, 1992), trends clearly indicate that the number of days worked off-farm has increased, and the number of farm family members involved has increased dramatically (primarily female spouses).

Farm women have higher percentage employment rates than women in all sizes of rural and urban communities in Canada (Dion and Welsh, 1992). With approximately 35 percent of farm operators (primarily males) and 60 percent of farm spouses (primarily female) actively involved in part-time or full-time off-farm work, the rural community becomes inseparable from the farm.

Since most off-farm employment occurs in communities, the farm-town dichotomy is evolving into a much more closely linked rural economy. Rural business and industry need labour from the farm, and farm families need employment in non-agricultural ventures. This relationship must be at the center of policy discussions concerning viable rural economies. In the early 1990's, a higher percentage of farm family income was derived from off-farm wages and salaries than from sales or transfer-payments related to agricultural products (Stabler and Olfert, 1992).

The need for maintenance of a network of sustainable centres in rural Manitoba is recognized. The division between viable and non-viable communities, however, is not clear (Stabler and Olfert, 1992). Key indicators either have not been identified or have not been measured adequately. Many rural communities appear similar, but one thrives while another falters. This report concerns the restructuring that is occurring within the network of communities in agro-Manitoba. The data base is necessarily incomplete and variable over time, requiring cautious interpretation. In the broad trends, however, may lie some understanding of the system, and in the data for each community may lie a partial assessment of its economic status.

METHODS

Data on 41 incorporated cities, towns and villages with populations of more than 500 people were gathered through use of the Community Profile Information System as published by Manitoba's Economic Development Network for the years 1968 and 1989. These publications allowed retrieval of information for the years 1966 and 1986 for each centre.

Data include the number of businesses within each of the 21 Standard Industrial Classification (SIC) codes for each centre, the population of each town and city (MacLean and Rounds, 1991), and the number of grain elevators, hospitals (Rounds and MacLean, 1991) and high schools (Rounds, 1991). The decision to use 1966 data was made on the basis that earlier reports either were not available or were incomplete. Data were compared first on the basis of all towns and cities forming a single group. Analysis was taken a step further by grouping the centres into clusters on the basis of their entire information portfolio (Stabler, 1987).

The statistics package SAS (1982) was used to sort the 41 Manitoba Communities into groups, each of which would contain centres that are similar to each other with respect to commercial, population and institutional properties. This procedure was accomplished by using cluster analysis, where the entire data set was standardized prior to clustering (to control for different scales used in measurements). Cluster analysis is designed to select subsets of similar communities from the set of all communities (Stabler et al., 1992). The clustering procedure used by the program was Ward's method (Wishart, 1987).

A decision was made regarding the number of clusters to be used in the study. Guided by the program output, the number of times cluster means appeared during the procedure, and the a priori theories of the Royal Commission on Agriculture and Rural Life (1957), Borchert and Adams (1963), Hodge (1965), and Stabler (1987), we decided to use six clusters for each of the years 1966 and 1986. Finally, t-tests were used to verify that the clusters were derived from the same universe.

The purpose of classifying rural communities into clusters is to identify their position within central place theory, which is a system used to explain the number, size and spacing of urban places. The role of a "central place" within a hierarchy of communities is to act as a service and product distribution centre for the surrounding area. Central places ultimately arrange themselves in a network of overlapping zones for various

goods or services. The extent of each service area is determined by the nature of the good or service provided, and the threshold population needed to support a business that provides a given service.

Goods or services with low threshold populations (e.g. grocery stores) will be located in communities of all sizes within the region. Other goods or services, however, require larger populations to sustain demand (e.g. auto dealer, health services). Ultimately, the sizes of service areas vary directly with the sizes of centres, and the regions served by small centres lie within those of larger centres. This system typically results in identification of six functional levels in a central place hierarchy. From most complex to least complex (generally, largest to smallest) these levels are 1) primary wholesale-retail centres, 2) secondary wholesale-retail centres, 3) complete shopping centres, 4) partial shopping centres, 5) full convenience centres, and 6) minimum convenience centres (Stabler et al., 1992).

Cluster analysis, therefore, is used to classify the communities in a region into levels of the central place hierarchy. This is accomplished by measuring and inputting quantifiable characteristics of all communities. Business functions, infrastructural resources, and population are typical characteristics utilized. Results suggest how communities inter-relate and how functions overlap or complement each other.

While the number of communities in a given geographical area usually reflects population density, their actual distribution may be distorted by a number of factors. Topographic barriers or uneven distribution of resources may result in uneven population distribution, and hence an unusual distribution of communities. Transportation networks and specialization of function also may distort the pattern of communities. Recent information suggests that the behavioral patterns of people as both producers and consumers also may influence central place functions (Berry et al, 1988).

RESTRUCTURING WITHIN COMMUNITIES

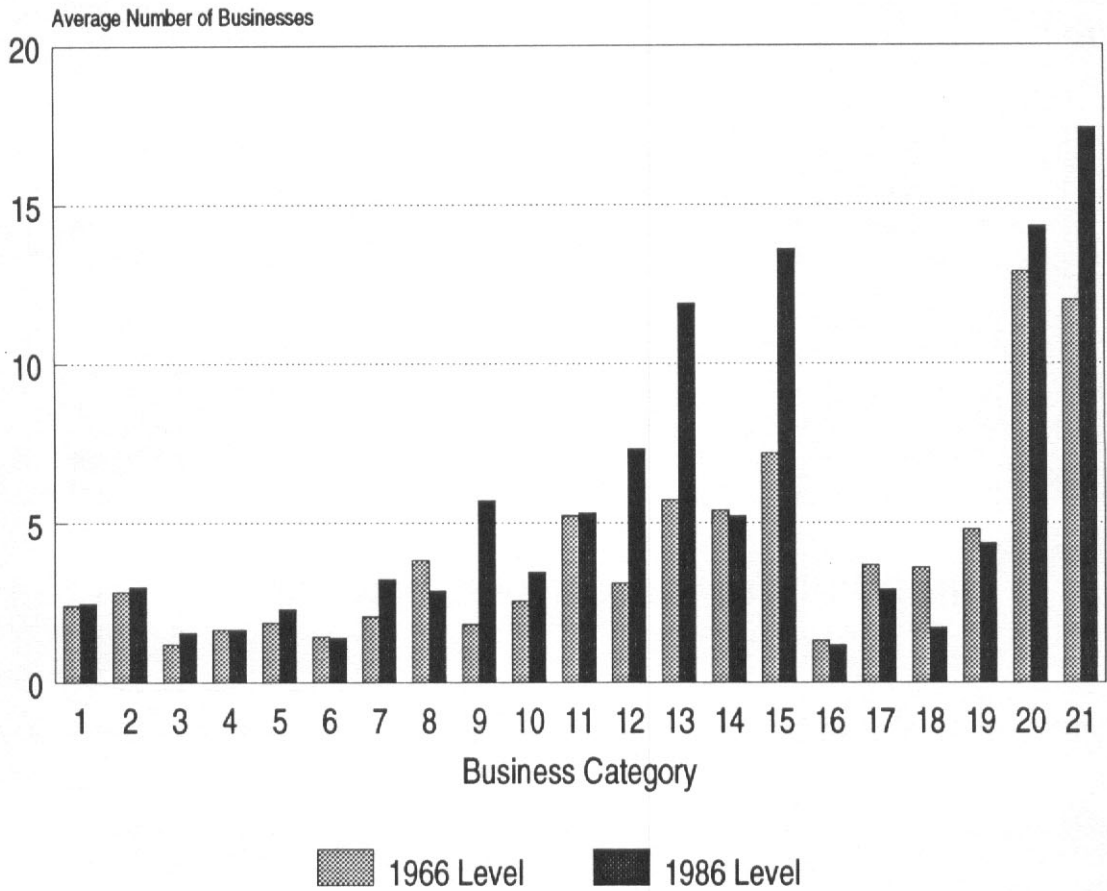
Descriptive Analysis of the Business Matrices of Rural Communities in Manitoba

This section analyzes all 41 towns and cities in Manitoba for which profile and census data were available. Because of the magnitude of differences in size and complexity, the City of Winnipeg is excluded in all cases, and the City of Brandon in some cases. Analyzing communities as if they formed "one cluster" allows an overview of business structure of the centres. By completing similar analyses for 1966 and 1986, trends and changes that have occurred over this 20 year period may be identified.

The average number of businesses in each of 21 categories in the 41 communities analyzed was determined for 1966 and 1986 (Figure 1). Considerable change occurred in the absolute numbers of various businesses, with increases in some areas and decreases in others. Noticeable increases occurred in auto repair centres (#9), home furnishing stores (#12), clothing stores (#13), restaurants (#15) and professional services (#21). Decreases occurred in the average number of auto sales dealerships (#8), bulk fuel outlets (#17) and farm implement dealers (#18). Other types of businesses were relatively stable in average numbers in the 41 communities. Stability, however, has to be interpreted in light of the fact that the combined populations of the communities involved increased by 18 percent between 1966 and 1986. This, in turn, must be interpreted in the knowledge that populations in rural municipalities decreased in all areas except around the City of Winnipeg (MacLean and Rounds, 1991).

Figure 1

**Average Number of Businesses in 1966
and 1986 in Communities in Rural
Manitoba**



- 1 = Laundries
- 2 = Personal services
- 3 = Furniture store
- 4 = Drug store
- 5 = Banks
- 6 = Credit agencies
- 7 = Specialty food

- 8 = Auto sales
- 9 = Auto repair
- 10 = General store
- 11 = Grocery store
- 12 = Home furnishing
- 13 = Clothing store
- 14 = Gas station

- 15 = Restaurant
- 16 = Business services
- 17 = Bulk fuel
- 18 = Farm implements
- 19 = Building materials
- 20 = Contractors
- 21 = Professionals

Although the average numbers in various business categories is indicative of overall trends, the types of businesses that change may reflect long-term restructuring of the business matrices of the communities. The losses are most evident in two areas: 1) large item dealerships (auto, farm equipment) that require extensive hinterlands to remain viable, and 2) agri-services (bulk fuel etc.). Major increases occur primarily in general service areas (Figure 1). Accordingly, agriculturally-dependent communities are most at risk, and those serving a wider public or diversified region are most stable.

The total number of businesses was compared with the populations for each community for 1966 and 1986 (Figure 2). This was done to gain insight into the relationship between the two variables, and to see how variation in town size reflects the number of businesses present. In both years, a high percentage of the observed variation is explained solely by the number of people living in a town. The close alignment of dots (representing towns) with the regression line (representing the relationship) suggests direct relationship between population and the number of businesses. The R-squared values indicate the strength of the relationship. In essence, 96 percent ($R^2=0.96$) of the observed variation in the total number of businesses in all the communities is explained by the single factor of population. This held true for both 1966 and 1986. Therefore, a strong direct relationship exists between the populations of Manitoba's business centres and the total number of businesses in each centre.

Comparison of the two graphs in Figure 2 shows that there has been little change in the relationship between 1966 and 1986. The very high R^2 s of 0.96 indicate a high degree of predictability in the relationship. Each graph also indicates three different groupings apparent in the data: (1) towns and cities with more than 4000 people, (2) centres between 1500 and 3999 people, and (3) those with less than 1500 people. This effect is especially apparent if the extreme point representing the City of Brandon is removed from the data (upper right point).

For towns with populations greater than 4000, there is a strong relationship ($R^2=0.99$) and high degree of predictability for the comparison of population to the total number of businesses in the towns (Figure 3). There has been little change in this relationship during the 20 year time period used.

Towns with populations between 1500 and 3999 people have a statistically significant relationship ($p<0.01$) between populations and total numbers of businesses, but predictability decreases from about 62 percent for 1966 ($R^2=0.62$), to 51 percent ($R^2=0.508$) for 1986 (Figure 4). The relationship, therefore, has not changed significantly over the last twenty years, but has weakened. Some towns in this category deviate from the expected pattern suggesting that factors other than population are of increasing importance in determining the number of businesses in these centres.

The Town of Rivers presents an unusual history. It's population decreased by 31 percent between 1966 and 1986 and the town has struggled to maintain businesses over the 20 years. Essentially, Rivers was a single industry town (an airbase). Closure of the airbase in 1971 resulted in Rivers suffering the fate of many small one industry towns that lose their industry. Closing of the airbase also caused decline of many business establishments that supported the base, and the population has declined. Rivers also suffers from proximity to Brandon.

The Town of Winkler, on the other hand, has been the fastest growing centre in Manitoba between 1966 and 1986, with growth of 131 percent in population (MacLean and Rounds, 1991) and 145 percent in number of businesses. Winkler became one of the major centres in South-Central Manitoba. Owing to the similarities and proximity of Winkler and Morden in 1966, growth of this magnitude in Winkler could be detrimental for Morden. Data indicates, however, that Morden had growth of 62 percent in population and 20 percent in number of business establishments during the same time period. Apparently the towns complement each other economically.

Figure 2

The Relationship Between Number of Businesses and Population for 41 Communities in Rural Manitoba, 1966 and 1986

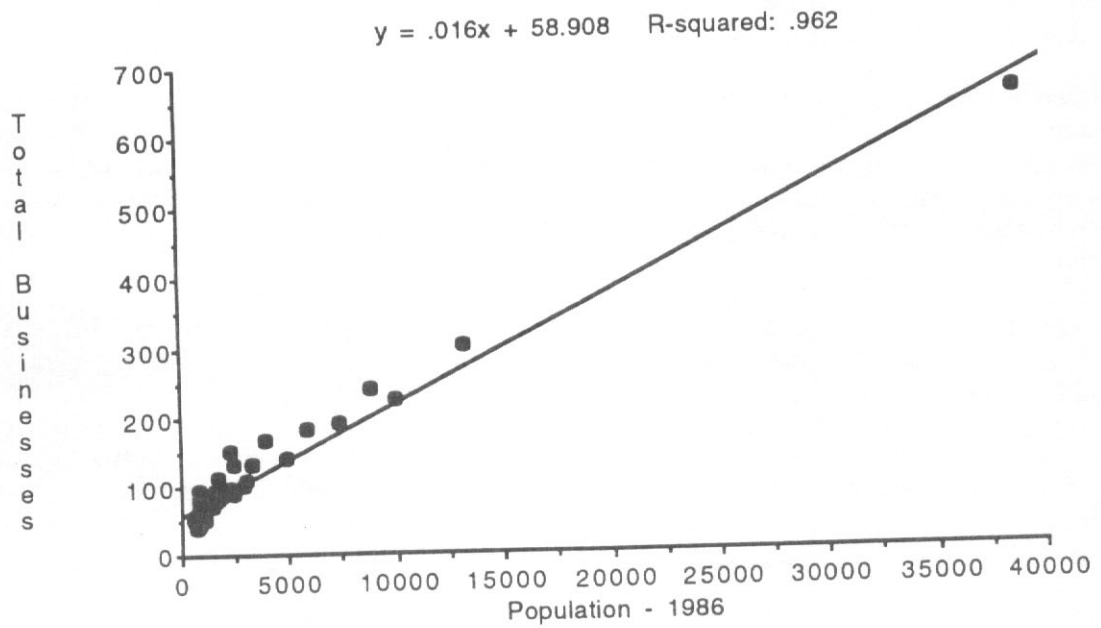
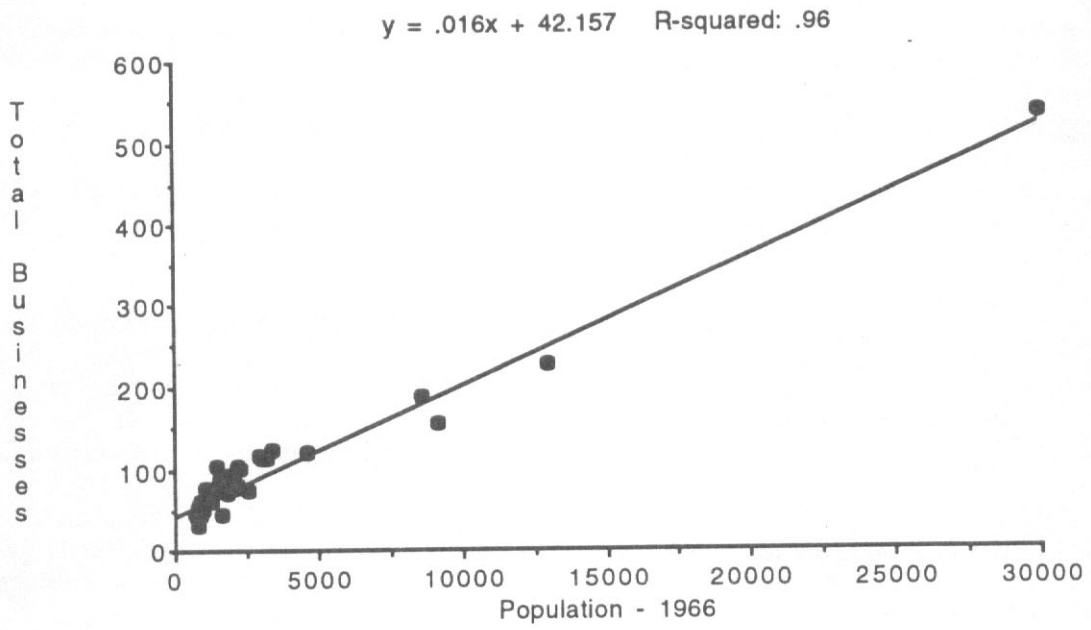
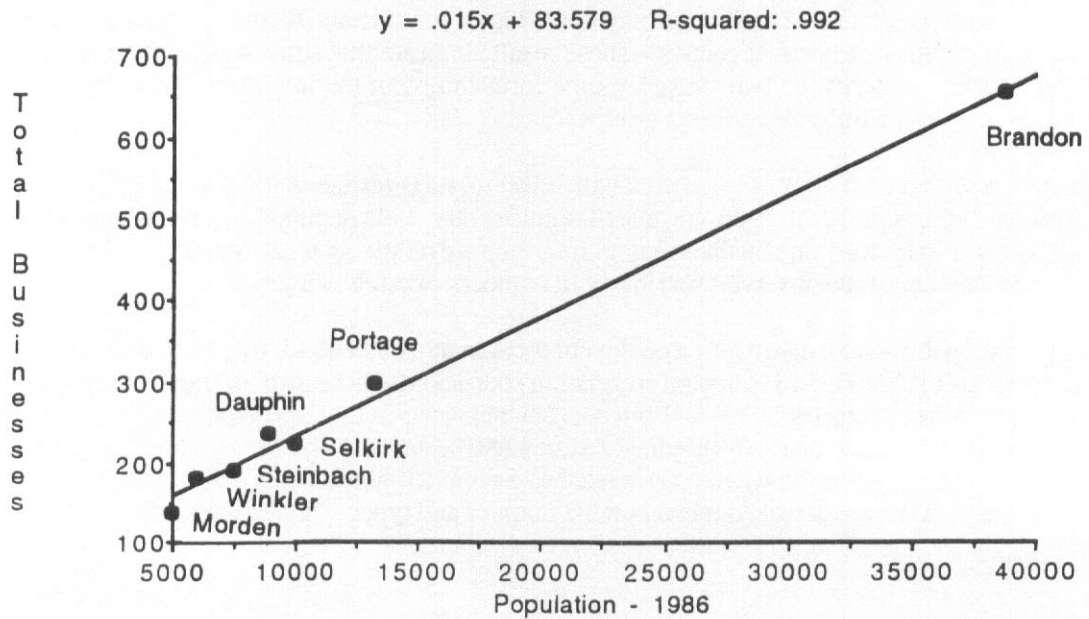
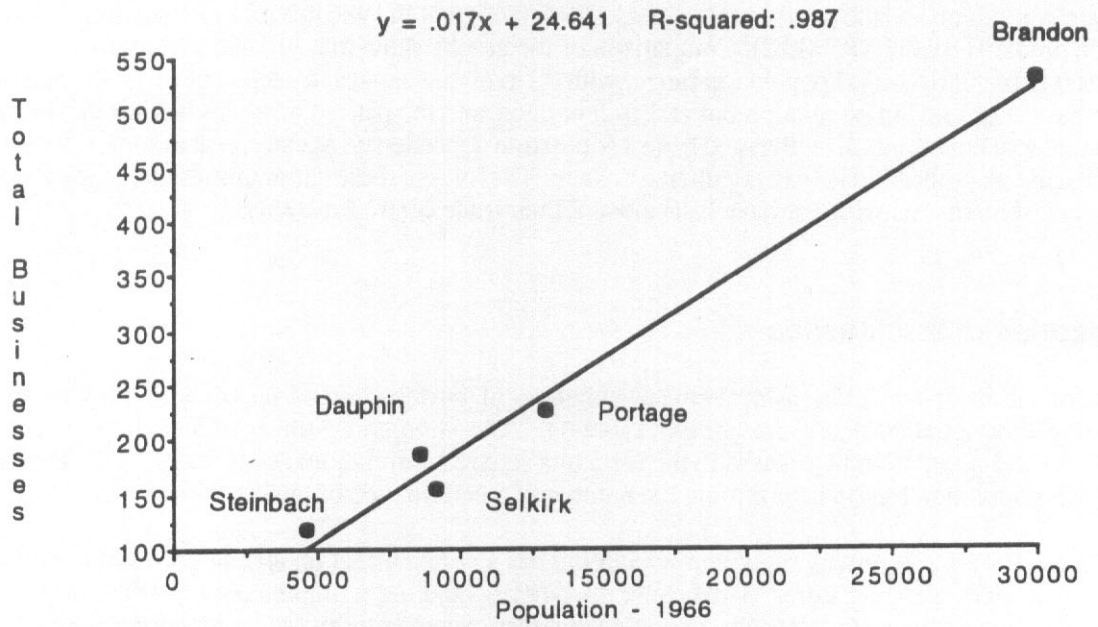


Figure 3

The Relationship Between Number of Businesses and Total Population for Manitoba Centres with Populations Greater Than 4000 in 1966 and 1986



Killarney (Figure 4) also is of interest owing to a 73 percent increase in the number of businesses within a town that increased 26 percent in population. Examination of 1986 data (Figure 4) shows Killarney as a distant outlier on the scattergram that has many more businesses than expected for a town of its size. This could indicate that it serves a larger than expected hinterland and has gained at the expense of smaller communities.

A noticeable shift occurred between 1966 and 1986 in the relationship between number of businesses and population in centres of less than 1500 people (Figure 5). In 1966 these towns had a strong relationship between population and the number of businesses ($R^2=0.63$), but in 1986 this relation had decreased to a level of little predictive value ($R^2=0.22$). Comparison of the graphs show that in 1966 the towns generally were clustered in the 750 to 1000 population range, with 30 to 60 businesses in each centre. In 1986, most of the towns have increased in population but at different rates, and the pattern of towns has spread on the graph. The number of businesses also diverged from a population dependency, as enterprise in some towns increased or decreased disproportionately to population change. The roles of these communities obviously are changing and many of them are losing (or have lost) most of their trade centre functions.

Categories of Businesses

Interpretation of the relationship between numbers of businesses and populations may be refined by analyzing individual business categories (Table 1). The strength of the relationship between business categories and population in towns is in the form of a squared correlational coefficient (R^2). This measures the effect population has on determining the number of a certain type of business in a town.

Data for 1966 for all towns show that population has a strong effect on all categories of business except auto repair (#9), general stores (#10), bulk fuel (#17), and farm implements (#18). In 1986 strong relationships are evident for all towns and all businesses except laundry (#1), specialty foods (#7), general stores (#10), gas stations (#14), bulk fuel (#17), and farm implements (#18).

Among the population categories, however, towns and villages with less than 1500 people show weak relationships between population and businesses for both years. Only 10 types of businesses correlated significantly with population in 1966, and only 4 in 1986. Other factors, therefore, determine the number of many types of businesses in small centres. These results indicate that some functions have shifted upward one "step" (furniture stores) or two "steps" (home furnishings) in the town size hierarchy. Restructuring obviously is occurring within the business groups.

This interpretation also applies to centres with 1500 to 4000 residents for both years, where 7 business categories in 1966, and 10 in 1986 correlated significantly with population. Although coefficients are statistically significant for some business categories, they are relatively weak for most and never account for more than 58 percent of the observed variability in numbers of establishments.

Strong relationships are evident between the numbers in most business categories, and centres with 4000 or more residents (Table 1). In 1966, high correlation coefficients occur in 16 of the 21 categories. A similar pattern occurs in 14 categories in 1986. Low coefficients occur in the following categories: laundries (#1), specialty foods (#7), auto repair (#9), general stores (#10), gas stations (#14), bulk fuel (#17), and farm implements (#18). Apparently, when a town reaches a population exceeding 4000 residents, the number of citizens begins to have an increased impact on the number and types of businesses within the centre.

Figure 4

The Relationship Between Number of Businesses and Total Population for Manitoba Centres with Populations between 1500-3999 in 1966 and 1986

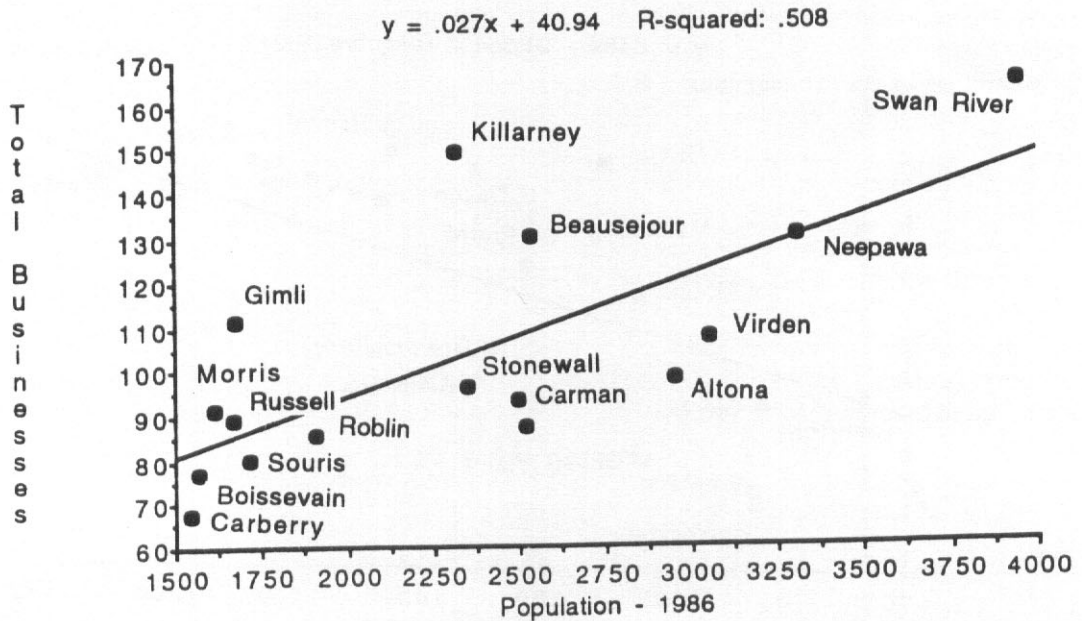
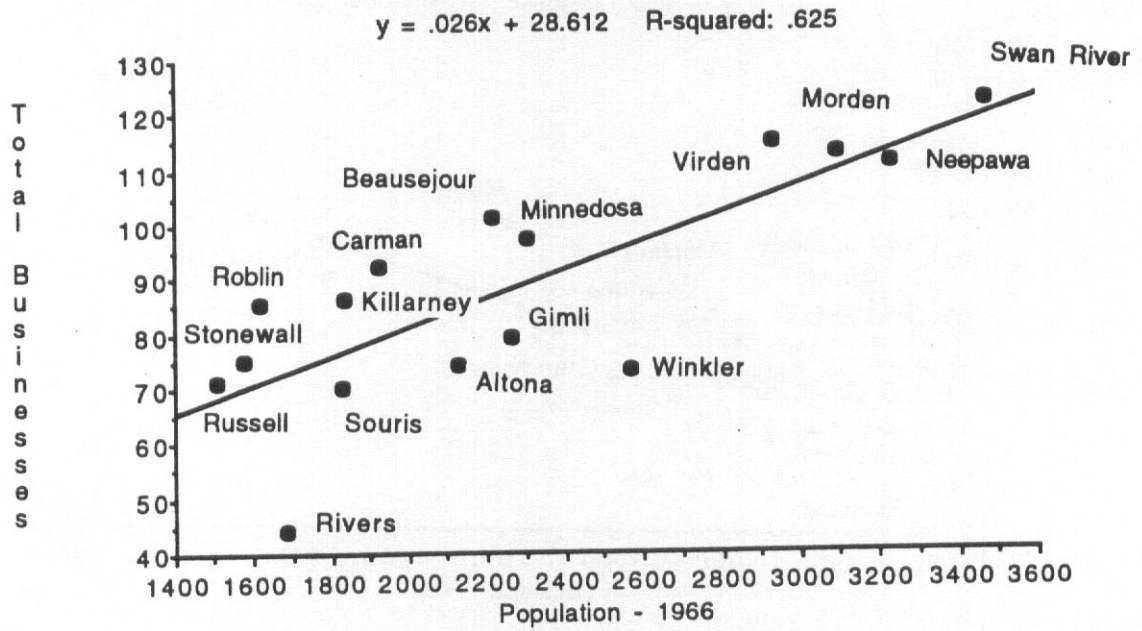
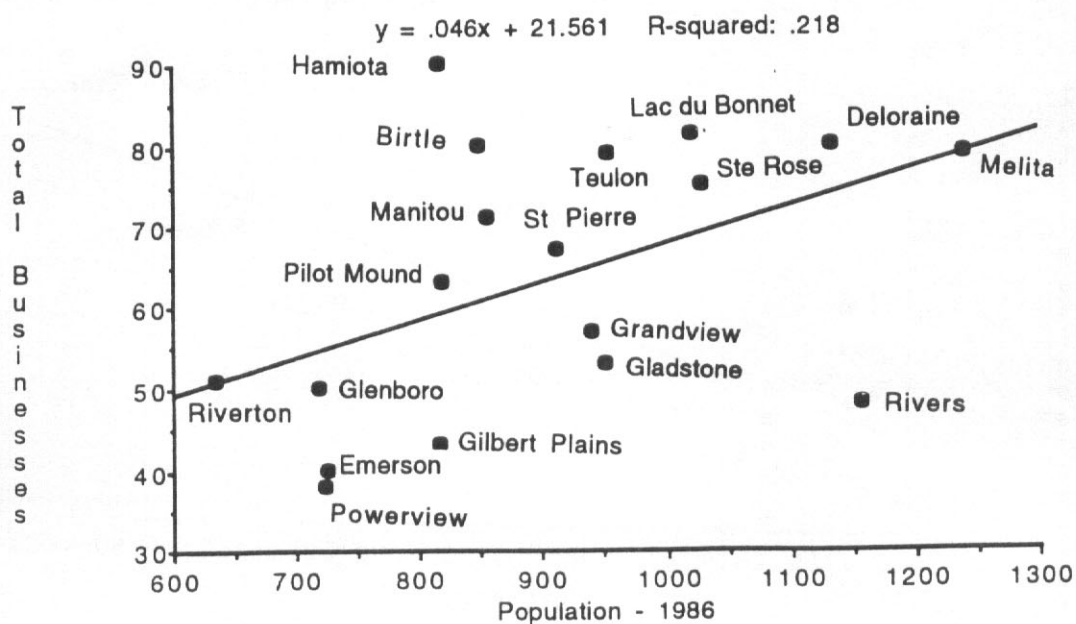
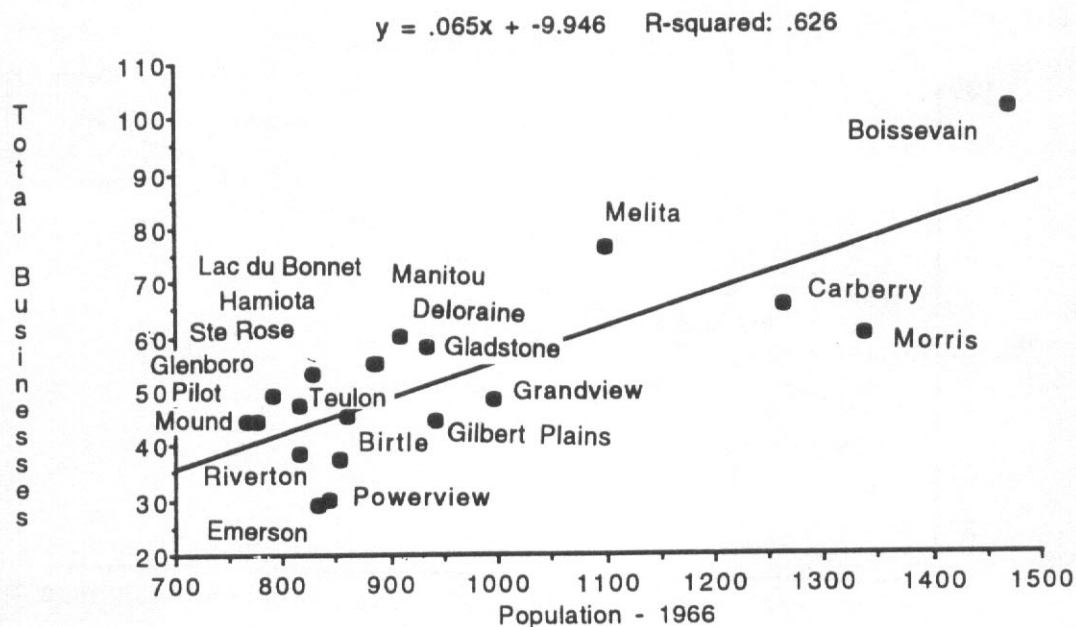


Figure 5

The Relationship Between Number of Businesses and Total Population for Manitoba Centres with Populations of Less Than 1500 in 1966 and 1986



Important changes occurred in relationships between populations and the numbers of various types of businesses between 1966 and 1986. The smallest towns and villages restructured most in their business composition. In 1966, the number of people in small towns accounted for 63 percent of the variation in all businesses, but this value decreased to only 22 percent in 1986. Conversely, centres in all other population categories either increased or remained the same in overall relationships.

The number of businesses in the different categories varied significantly relative to populations. In 1966 more than 90 percent of the variability was accounted for in the number of establishments in banks (#5), grocery stores (#11), restaurants (#15), contractors (#20) and professionals (#21). Ten other business types fell in the 75-90 percent explainable range. Auto repairs (#9), general stores (#10), bulk fuel outlets (#17) and farm implement dealerships (#18) related poorly to the population of a community. A similar pattern occurred in 1986, but the strength of relationship decreased noticeably for specialty foods (#7), gas stations (#14) and bulk fuel outlets (#17), and increased considerably for general stores (#10) and home furnishing establishments (#12). Businesses that are dependent entirely on agriculture would not be expected to relate to changes in population within the towns (e.g. bulk fuel outlets, implement dealerships).

Table 1. Strength of linear relationship (R^2) between population and businesses in various categories for 1966 and 1986 in Manitoba communities

Business category	Population category							
	<1500		1500 to 4000		4000 +		All towns	
	1966	1986	1966	1986	1966	1986	1966	1986
Laundry	.203*	.002	.148	.108	.959*	.394	.763	.568
Personal service	.170	.017	.005	.056	.916*	.903*	.751	.785
Furniture store	.367*	.039	.070	.477*	.904*	.902*	.778	.842
Drug store	.007	.083	.038	.332*	.970*	.940*	.822	.878
Banks	.001	.399*	.390*	.266*	.956*	.992*	.911	.899
Credit agencies	.087	.017	.001	.070	.858*	.794*	.864	.755
Specialty foods	.262*	.140	.008	.018	.937*	.359	.812	.425
Auto sales	.197	.415*	.179	.390*	.908*	.732*	.838	.784
Auto repair	.001	.002	.054	.092	.150	.555	.467	.690
General store	.006	.016	.454*	.142	.118	.509	.174	.355
Grocery store	.129	.098	.163	.003	.990*	.917*	.952	.918
Home furnishings	.347*	.140	.146	.101	.646	.970*	.647	.885
Clothing store	.581*	.003	.462*	.093	.995*	.907*	.832	.878
Gas station	.415*	.094	.585*	.407*	.964*	.150	.863	.454
Restaurant	.301*	.038	.338*	.414*	.949*	.993*	.933	.977
Business services	.044	.225*	.059	.234	.885*	.832*	.864	.751
Bulk fuel	.035	.144	.191	.303*	.683	.006	.344	.128
Farm implements	.442*	.143	.114	.402*	.313	.449	.252	.348
Building materials	.203*	.165	.303*	.453*	.901*	.798*	.675	.703
Contractors	.302*	.392*	.062	.124	.968*	.925*	.950	.829
Professionals	.085	.094	.408*	.594*	.968*	.936*	.950	.906
Total number of businesses	.626*	.222	.625*	.508*	.987*	.992*	.960*	.962*

* Significant $p < 0.05$

Additional insight is gained by analyzing the relationship between **changes** in population and number of businesses. Virtually no relationship is evident when comparison is based on numerical change, and only a weak relationship occurs when based on percentage change over the 20 years (Figure 6). Most towns are plotted in the quadrant defined by positive population and business growth. Data indicate, however, that 11 towns that are experiencing declining populations actually support an increased number of businesses. Obviously, communities respond to factors other than just their internal populations to support business functions. Some possible factors include regional population change, tourism, and restructuring of hinterlands as all communities in an area change through time. Since the smallest centres in agro-Manitoba are not included in this analysis, gains in some centres likely reflect losses in smaller centres within their hinterlands. Also, the "people" are changing behaviour as expectations increased between 1966 and 1986, and people extended their shopping areas (Stabler, 1992).

Four towns increased in population during the 20 year period, but were unable to sustain the number of businesses they had in 1966 (Gladstone, Roblin, Minnedosa, and Boissevain) (Figure 6). All may have lost as businesses shifted to nearby larger centres (Dauphin for Roblin, Neepawa or Portage la Prairie for Gladstone, Brandon or Neepawa for Minnedosa, and Killarney or cross-border shopping for Boissevain). These alternative centres are either or both larger and experiencing growth in businesses.

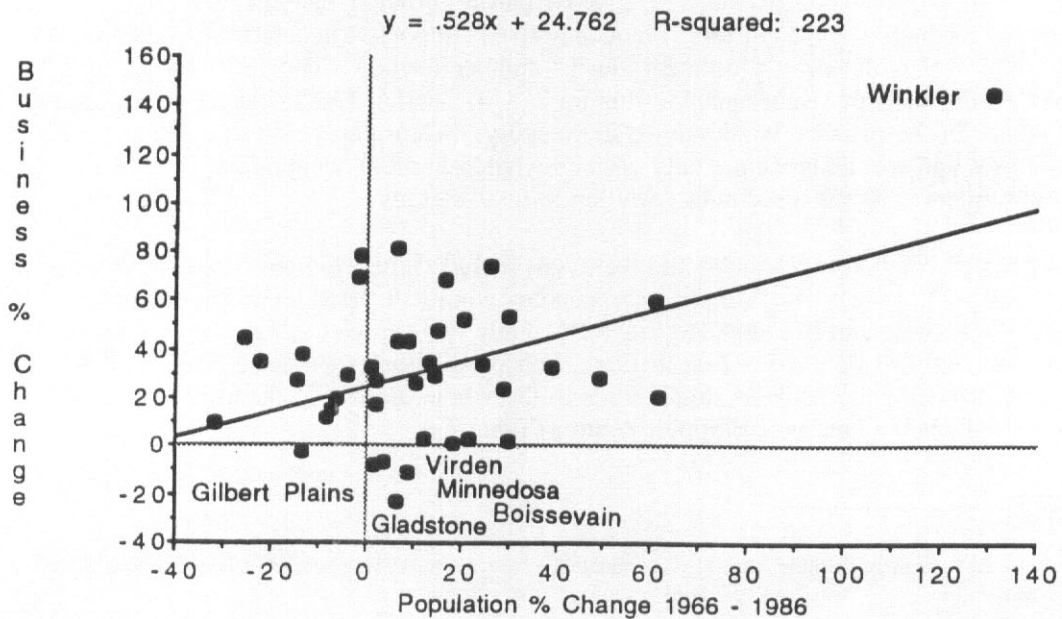
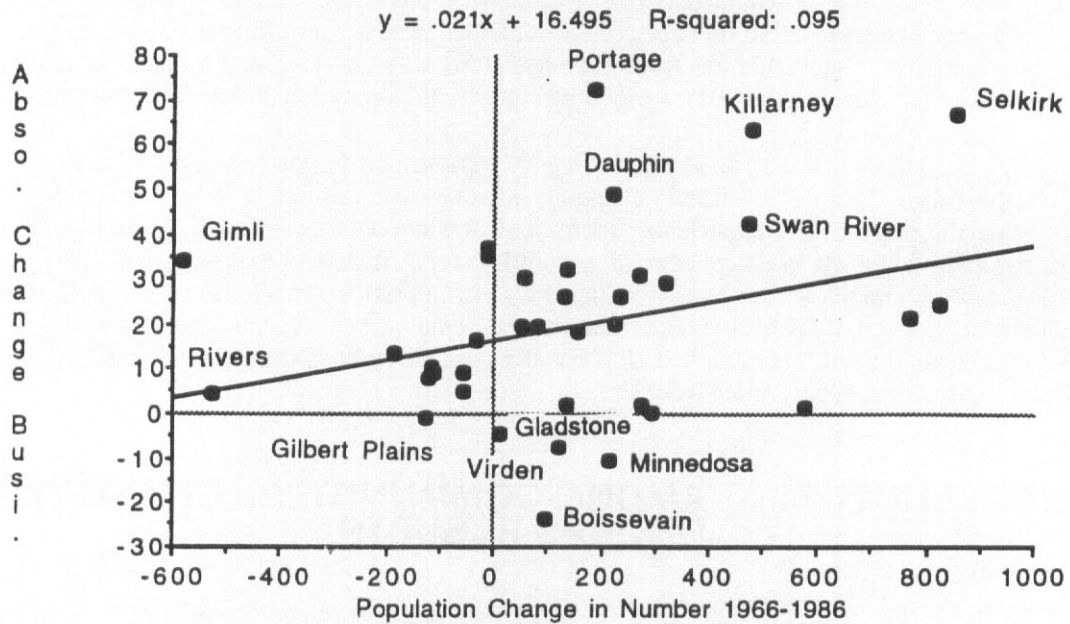
Finally, Gilbert Plains experienced loss in both population and number of businesses, and is the only town analyzed that falls into the lower-left quadrant (Figure 6). We suspect that many of the smaller towns of the Province (less than 500 people) may be predominant in this category, but are not separately censused and are excluded from this analysis.

The quadrant that includes the majority of the towns (n=21 for percentage, and n=25 for numerical change) within the study represents an increase in both numbers of businesses and population (Figure 6). The Town of Winkler witnessed increase in both population and number of businesses between 1966 and 1986, and the nearby community of Morden also had growth. Also of interest owing to increases are Steinbach, Stonewall, Altona, Killarney, Teulon, and St. Pierre. Each of these towns show substantial gains in one or both of the measured parameters. St. Pierre, Teulon, and Killarney are anomalies in that they have had minimal increases in population, but have sustained extensive diversification of their business structure (increases of 81 percent in St. Pierre, 68 percent in Teulon, and 73 percent in Killarney). Steinbach and Altona have proportional increases in businesses and population, suggesting a stable growth pattern. Morden and Stonewall, however, show different growth patterns. They have increased in populations (49 percent in Stonewall and 62 percent in Morden), but the number of businesses has not experienced proportional growth. Stonewall lies within the urban shadow of Winnipeg, while Morden is located close to Winkler. Inclusion of manufacturing firms and other producers would probably help explain these "anomalies".

Overall, there is no impending "crisis" in the largest of Manitoba's towns and villages. Few are experiencing decline in both number of businesses and population. The fact that some of the towns show large decreases in one variable, with no relative balancing in the other variable, suggests that restructuring is occurring in rural servicentre roles. However, a decrease in either variable eventually may lead to decline. As restructuring occurs the towns that experience growth will be enhanced by the demise of businesses in the smaller regional towns, and by concurrent expansion of their trade area.

Figure 6

The Relationship between Absolute and Percent Changes in Number of Businesses and Populations in 41 Manitoba Communities in 1966 and 1986



Population Age Structure and Community Change

Age distributions of the residents in the towns was examined to measure relationships between a community's population age structure and the number of businesses within the centre. The City of Brandon was excluded from analysis because it was an outlier on the graphs, and distorted interpretation. In 1966, age is related to the number of businesses in a community, but it is relatively stable across the three age categories used (<20 years, 20-54 years, 55+ years) (Figure 7). Predictability ranged from 82 - 89 percent among age categories. Similar results occurred in 1986, with predictive values varying only between 87-89 percent among age categories. No one age cohort, therefore, exerts controlling influence on total numbers of businesses in a town. Age structures from 1966 and 1986 were analyzed and found to be similar ($r=0.93$ to 0.97 among age categories ($p<0.001$), suggesting stability in population composition by age (Figure 8).

The equilibrium points in the 20 to 54 years category were similar for the two years (250 people, and 251 people, respectively). That for the elderly category, however, was extremely low (10 people), suggesting that all towns in the analysis have experienced increases in the number of people age 55 and over. Equilibrium points are the levels at which 1966 age structures would perfectly match 1986 predictions. This supports the perception that many small towns are experiencing elderly in-migration. This influx, however, has not created a noticeable restructuring of the business matrices in rural communities. It is possible that changes will occur as unknown critical thresholds are reached. It is equally possible that seniors may influence the product-mix of businesses rather than types of businesses¹.

RESTRUCTURING AMONG COMMUNITIES: CLUSTERED GROUPS RESULTS

Data concerning the numbers and types of businesses and the related community characteristics of population, education facilities, grain elevators and hospital services were entered into the statistical package SAS in order to allow grouping into clusters. Clusters are formed as a dendrogram, or pictorial representation of how the clusters were formed in stepwise manner based on the lowest error term by the statistical package. Six distinct clusters typically are defined to represent the hierarchical levels of primary wholesale-retail secondary wholesale-retail, complete shopping, partial shopping, full convenience, and minimum convenience centres. Related statistics indicated that five clusters provide reliability to both the choice of number of clusters and formation of the clusters. Frequency also is important in determining the number of clusters for 1966, as five was the most prominent cluster number formed. The 1986 choice of 5 clusters was maintained for consistency. Subsequent testing for 2, 3, 4, 5 and 6 clusters clearly maintained Winnipeg as the only centre in the primary wholesale-retail category. Accordingly, Winnipeg was removed from all further analyses and was assigned the only primary wholesale-retail designation. The first category recognized in subsequent analyses is secondary wholesale-retail centres.

The hierarchical categories (clusters) and the towns included for 1966 and 1986 show some consistency and some change (Table 2). The primary and secondary wholesale-retail levels are occupied consistently by single cities (Winnipeg and Brandon, respectively). Only two complete shopping centres were recognized in 1966, but the number doubled to four in 1986. Subsequent analysis using a different data base for 1991 (Stabler and Olfert, 1992) retained single cities in the wholesale-retail categories, and added one centre (Steinbach) to the list of complete shopping centres (Table 2).

1 The Rural Development Institute currently is conducting a study on the buying patterns of senior citizens in rural communities.

Figure 7

The Relationship between the 1966 and 1986 Population Age Structures and the Numbers of Businesses in 41 Communities in Rural Manitoba

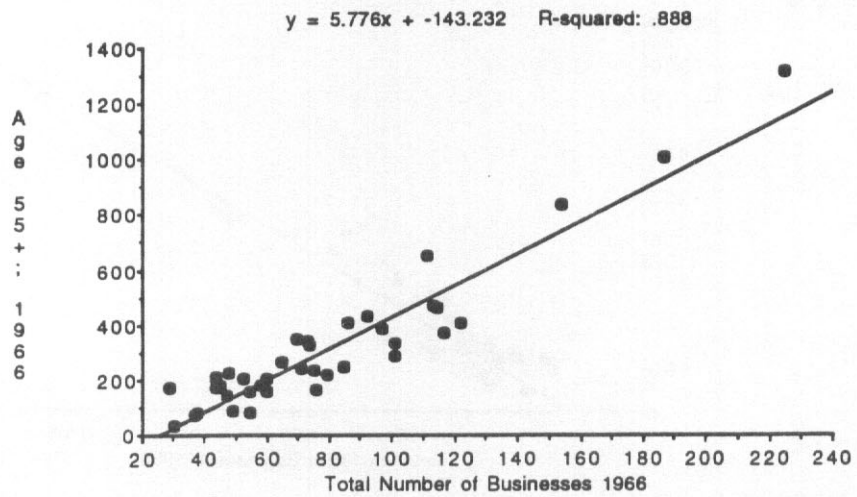
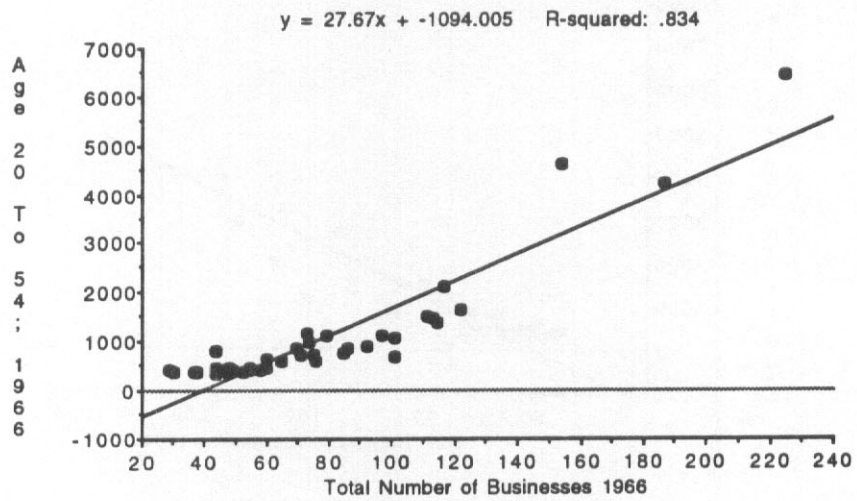
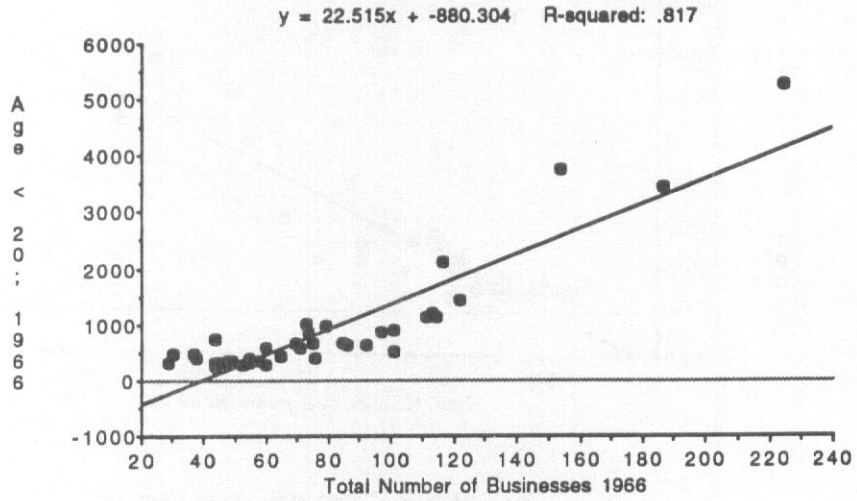


Figure 7 Con't.

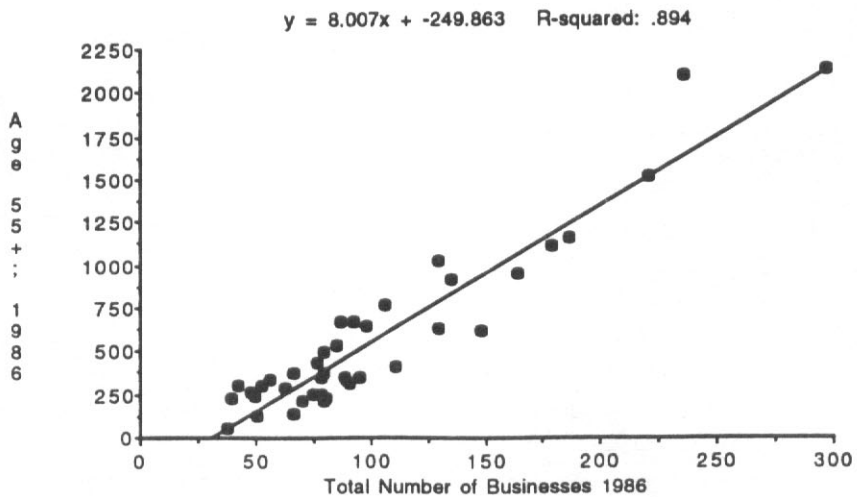
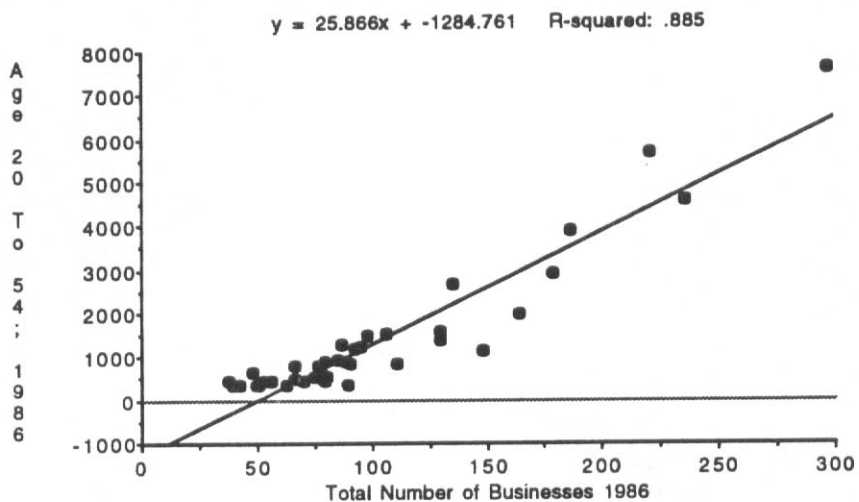
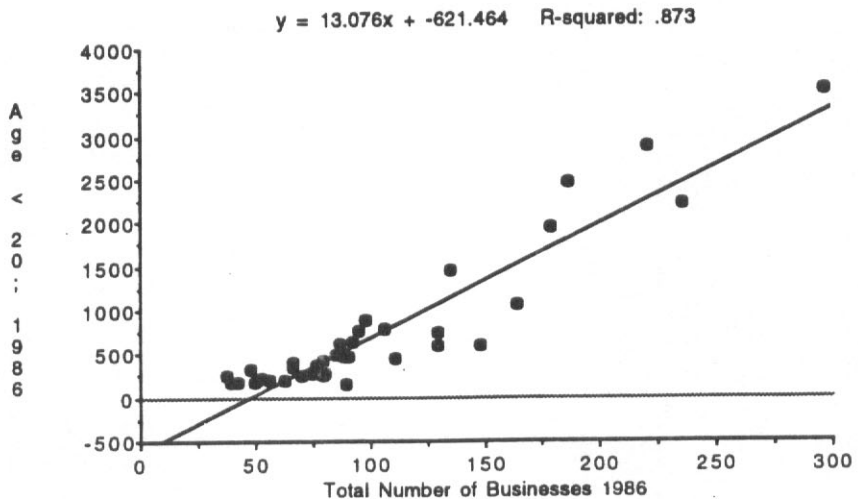


Figure 8

The Relationship between Identical Age Cohorts in the 1966 and 1986 Population Structures of 41 Communities in Rural Manitoba

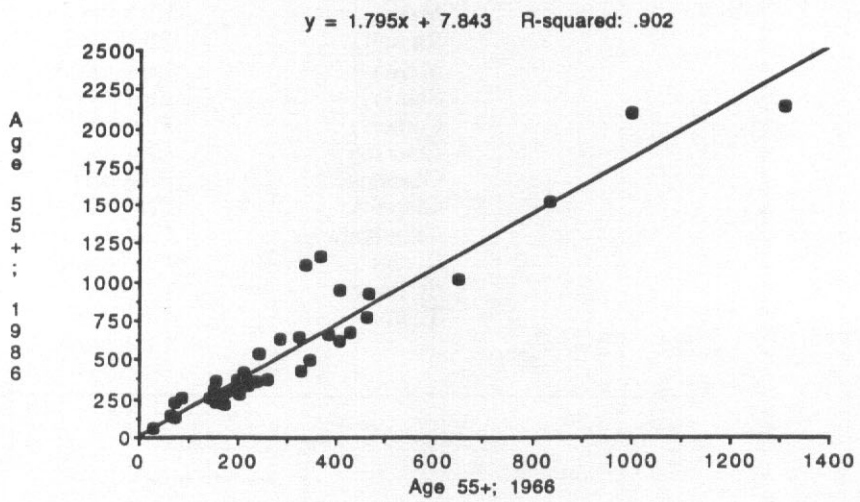
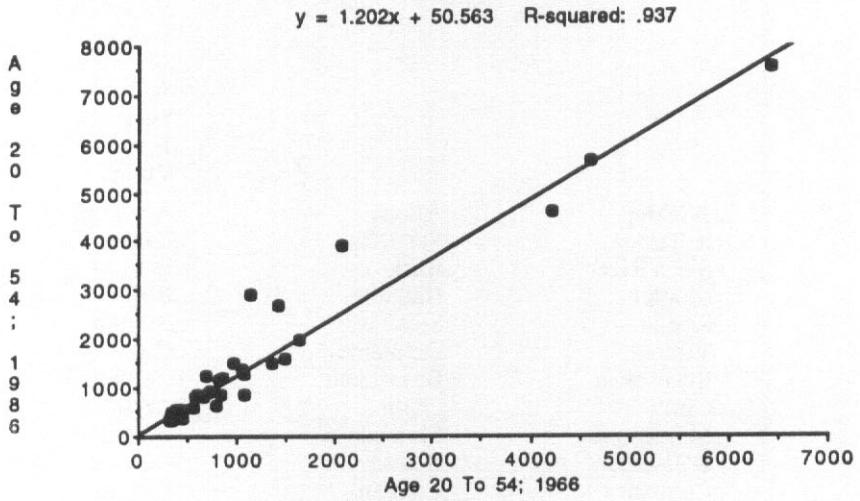
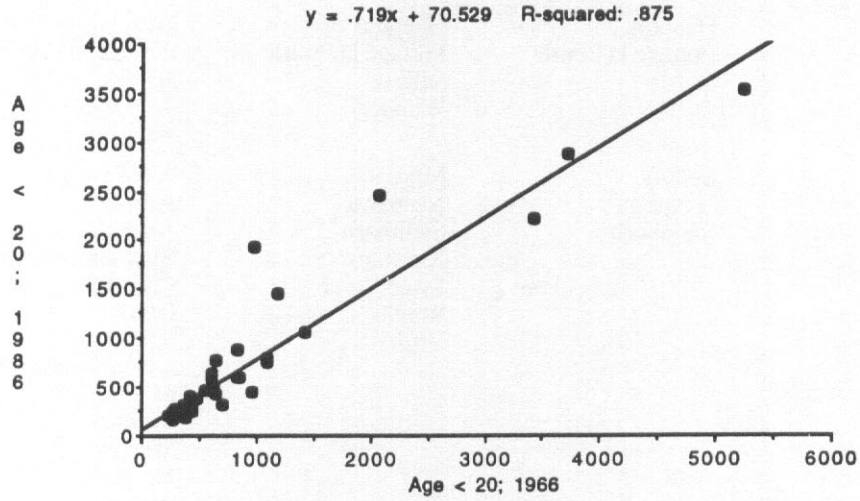


Table 2. Cluster divisions by category and year, and trade centres involved in agro-Manitoba

Cluster category	1966	1986	1991 (Stabler and Olfert, 1992)
Primary wholesale/retail	Winnipeg	Winnipeg	Winnipeg
Secondary wholesale/retail	Brandon	Brandon	Brandon
Complete shopping	Dauphin Portage la Prairie	Dauphin Portage la Prairie Selkirk Winkler	Dauphin Portage la Prairie Selkirk Steinbach Winkler
Partial shopping	Selkirk Neepawa Steinbach	Morden Neepawa Steinbach Killarney Swan River Roblin Virден	Altona Arborg Ashern Beausejour Carman Gimli Killarney Lac du Bonnet Melita Morden Morris Neepawa Roblin Russell Shoal Lake Souris Ste. Rose Du Lac Stonewall Swan River Teulon Virден
Full convenience	Winkler Killarney Swan River Morden Roblin Virден Beausejour Gimli Minnedosa Boissevain Carman	Altona Ste. Rose Birtle Hamiota Stonewall Deloraine Beausejour Gimli Minnedosa Boissevain Carman Manitou Morris Russell Melita Souris Carberry Emerson Gladstone Glenboro Grandview Rivers St. Pierre Teulon	Amaranth Baldur Benito Birtle Brunkild Carberry Cartwright Crystal City Deloraine Dominion City Dugald Elie Elkhorn Elm Creek Elphinstone Emerson Erickson Eriksdale Ethelbert Fisher Branch Gilbert Plains Gladstone Glenboro Glenella Grandview Grunthal

Cluster category	1966	1986	1991
Full convenience con't			Hamiota Hartney Ile Des Chenes Kelwood La Broquerie Landmark Lockport Lorette Lundar MacGregor Manitou McCreary Miami Minitonas Minnedosa Ninette Niverville Notre Dame de Lourdes Oakbank Pierson Pilot Mound Powerview Reston Rivers Riverton Rorketon Rosenort Rossburn Sandy Lake Sanford Somerset Sprague St. Adolphe St. Claude St. Jean Baptiste St. Pierre Jolys Ste Anne Strathclair Swan Lake Treherne Vassar Vita Warren Waskada Wawanesa Whitemouth Winnipeg Beach Winnipegosis
Minimum convenience ¹	24 of 41 centres	5 of 41 centres	175 of 279 centres

¹ A list of minimum convenience centres is given in Appendix A.

Greater change is evident among the lower level centres. Partial shopping centres included only Selkirk, Neepawa and Steinbach in 1966, but seven centres were involved in 1986 (Virden, Roblin, Swan River, Killarney and Morden all moved up to the partial shopping category).

The 11 full convenience centres in 1966 expanded to 24 towns and villages by 1986. Conversely, 24 minimum convenience centres were recognized in 1966, but only 5 in 1986 (Table 2). The decrease, however, resulted primarily from upward movement of many of the centres previously classified as full convenience centres.

The four trade centres of Winnipeg, Brandon, Dauphin and Portage la Prairie maintained their functional levels within the hierarchy over the 25 year period. Selkirk moved up one level between 1966 and 1986 and Steinbach did the same between 1986 and 1991. Winkler, however, moved up two levels from a full convenience to a complete shopping centre between 1966 and 1986, and retained its position in 1991.

It should be recalled that data include only the 41 villages, towns and cities for which community profiles and census data are available in both 1966 and 1986. For the most part, these are the larger centres in the province, and would occupy the higher levels of the central place hierarchy. The unidirectional upward movement in the hierarchy, therefore, suggests that the communities involved have grown in either or both population and services available. This is consistent with data relating to numbers of businesses and population change previously presented.

Characteristics of the cities, towns and villages of agro-Manitoba that occupy each functional level of the central place hierarchy also reveal some consistency and some change. The population of Winnipeg increased rapidly and consistently between 1966 and 1991, solidifying its position as Manitoba's only primary wholesale-retail centre (Table 3). Brandon increased in population between 1966 and 1986, remained stable to 1991, and retained its position as the only secondary wholesale-retail centre in the Province. It should be noticed that Winnipeg's population is more than 10 times greater than that of Brandon, which, in turn, is four times greater than that of the average for complete shopping centres. In essence, the magnitudes of difference apparent in the three highest functional categories have not changed, and likely will not change in the near future. It is unlikely, therefore, that the relationships among these communities will change.

Complete shopping centres are reasonably consistent in average population and numbers of businesses over the years (Table 3). Only two of five centres recognized in 1991, however, gained in population between 1986 and 1991; Steinbach (9.9 percent) and Winkler (7.9 percent). Portage la Prairie (-0.1 percent) remained stable, while Selkirk (-2.0 percent) and Dauphin (-4.8 percent) declined (MacLean and Rounds, 1991; 1991 Canada Census).

The change in characteristics for partial shopping centres is more complicated (Table 3). An increase from three to seven communities within this functional category occurred between 1966 and 1986. The average population decreased by more than 30 percent, but the average number of businesses increased. This suggests that these towns were assuming business functions for other communities in their hinterlands that were declining (presumably smaller communities).

The average population of the partial shopping centre category decreased by nearly 50 percent between 1986 and 1991, as the number of places increased from 7 to 22 communities (Table 3). This would be expected as some smaller communities moved up in the functional hierarchy. Also, the 1991 data include a larger number of smaller places. The number of businesses changed from an average of 137 in 1986 to 74 in 1991, but the average percentage decrease within the category (45 percent) was slightly less than that of the average population decrease (47 percent). These centres, therefore, maintained a disproportionate number of businesses relative to their internal populations. Again, it appears that these centres are gaining functions faster than population, and may be benefitting from the demise of smaller nearby towns and villages. It should be recalled that the 1991 data input are not directly comparable to those used in 1966 and 1986, and

the decreases in average population and numbers of businesses reflect the **addition of smaller towns** into the data set rather than absolute losses in towns in each hierarchical category.

Table 3. Summary of characteristics of functional categories of trade centres in Manitoba¹

Functional category	Number centres			Population \bar{X} (\pm SD)			Businesses \bar{X} (\pm SD)		
	1966	1986	1991	1966	1986	1991	1966	1986	1991
Primary wholesale-retail	1	1	1	--	594,511	616,790	--	--	8,909
Secondary wholesale-retail	1	1	1	29,981	38,708	38,567	531	654	676
Complete shopping	2	4	5	10,834 (2179)	9503 (2603)	9212 (2532)	206 (19)	233 (42)	201 (39)
Partial shopping	3	7	22	5678 (2527)	3860 (1752)	2056 (1161)	127 (19)	137 (32)	74 (29)
Full convenience	11	24	74	2336 (602)	1456 (656)	611 (397)	88 (31)	79 (20)	21 (12)
Minimum convenience	24	5	176	1091 (376)	803 (128)	192 (167)	53 (14)	55 (15)	5 (5)

¹ All 1991 data are based on analysis using different criteria based on different sources. Direct comparisons among years should be made in light of methodological variations explained in the text.

Data for centres in the two convenience categories are comparable only between 1966 and 1986 when similar data and the same centres were analyzed. The number of full convenience centres increased primarily at the expense of minimum convenience centres (Table 3). The average population declined dramatically as the number of communities increased, but the average number of businesses did not decline proportionally. Again, it appears that some centres gained at the expense of others because the overall rural population of Manitoba declined during the 20 year period.

Readers are reminded that more than 200 small communities were analyzed in the 1991 data. This is obvious in the number of communities in the three lowest functional categories (Table 3). The dramatic decline in average populations in both full and minimum convenience centre categories clearly indicates that the added centres were small. A proportional decrease occurs in the average number of businesses in convenience centre classifications between 1986 and 1991.

In total, the 1966, 1986, and 1991 analyses are consistent in determining the central place functions for wholesale-retail and complete shopping centres. Major differences occur only in the lower order groupings of all convenience and partial shopping centres. Downward shifts in population, however, were evident by 1986 in both the partial shopping and full convenience categories, and these do not relate to data inconsistencies. Restructuring of community functions in rural agro-Manitoba, therefore, reflects overall depopulation with concentration of more and more business functions in the larger remaining towns and villages. Most growth in function is being gained from the demise of convenience centres.

The Distribution of Trade Centres in Agro-Manitoba

Few centres occupied the four highest functional levels in 1966 (Figure 9). Winnipeg serves as the only primary wholesale-retail centre for the entire province and doubles as a regional centre for many functions in eastern Manitoba. Similarly, Brandon is the only secondary wholesale-retail centre and serves as the major regional centre for western Manitoba. The two cities are located 200 kilometres apart.

The two levels of shopping centres contained five cities and towns in 1966 (Figure 9). Portage la Prairie, Selkirk and Steinbach formed a triangle of third and fourth level communities around Winnipeg, serving the more densely populated Red River Valley, and accruing some agglomeration effects from the City. Dauphin emerges as the only shopping centre in the northwest Parkland Region. Neepawa is a fourth level (partial shopping) centre in Southwestern Manitoba. The spacing between shopping centres ranges from 83 km to 126 km, and averages 101 km. The four centres in southern Manitoba range between 30 km and 59 km from a wholesale-retail centre, and average 47 km. Dauphin is an outlier serving a geographically distinct region that does not have a level one or two centre.

The two wholesale-retail centres remained intact in 1986, but the two levels of shopping centres had increased to eleven communities (Figure 10). Portage la Prairie and Dauphin remained as complete shopping centres, and were joined by Selkirk and Winkler. Steinbach and Neepawa retained positions as partial shopping centres, and Morden, Killarney, Virden, Roblin and Swan River were added at this level.

Three distinct regions emerge from functional analyses in 1986 (Figure 10). The triangle of centres serving the Greater Winnipeg region expanded to the southwest where both Winkler (149 percent) and Morden (70 percent) sustained rapid growth and emerged as adjacent shopping centres in the southern area of the Central Region. The average distance between third and fourth level centres in the Red River Valley is 91 km, and they lie an average of 52 km outside of Winnipeg.

In Southwestern Manitoba, Neepawa, Killarney and Virden form a triangle of fourth level (partial shopping) centres around the City of Brandon (second level centre). The distance between fourth level towns is uniform, averaging 128 km. The three towns are located an average of 67 km from the City of Brandon.

In the northwestern Parkland (or Intermountain) Region, Dauphin, Roblin and Swan River form a triangle of shopping centres in 1986 (Figure 10). The average distance between centres is 111 km, and ranges from 94 km to 138 km. Among the three regional groupings, distances between shopping centres ranges from 83 km to 138 km, and averages 107 km.

In the two southern regions, the seven shopping centres average 59 km from a wholesale-retail centre. The shorter average distance of shopping centres from Winnipeg ($\bar{X}=52$ km) than from Brandon ($\bar{X}=67$ km) probably reflects the density of rural population and the historic development of Selkirk in close proximity to Winnipeg.

All spacings of shopping centres were tested statistically among groups. The three identifiable regional groupings were compared by Kruskal-Wallis criteria. Shopping centres in the Red River Valley, Southwestern Manitoba and in the Parkland Region did not differ significantly in spacing ($DF=2$, $H=4.34$, $H_{0.05}=5.59$, $p>0.05$). A similar result was obtained when the inter-regional measurements (Figure 10) were added as a fourth group of distances ($DF=3$, $H=4.89$, $H_{0.05}=7.14$, $p>0.05$). The spacing of shopping centres, therefore, does not differ significantly either among regions or between regions, suggesting evolution of a repeated pattern of spacing of third and fourth level communities.

Figure 9

Wholesale-retail and Shopping Centres in Manitoba, 1966

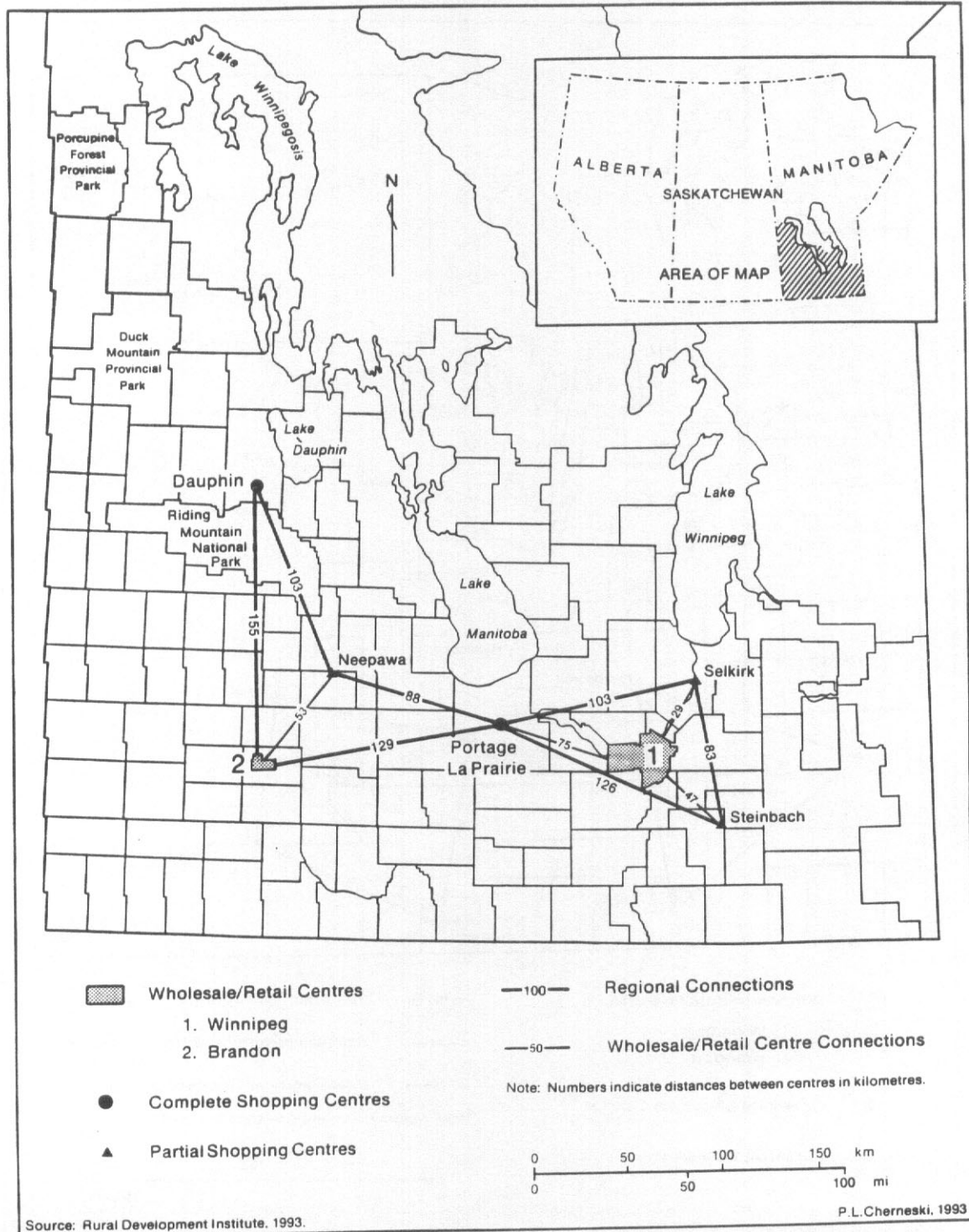
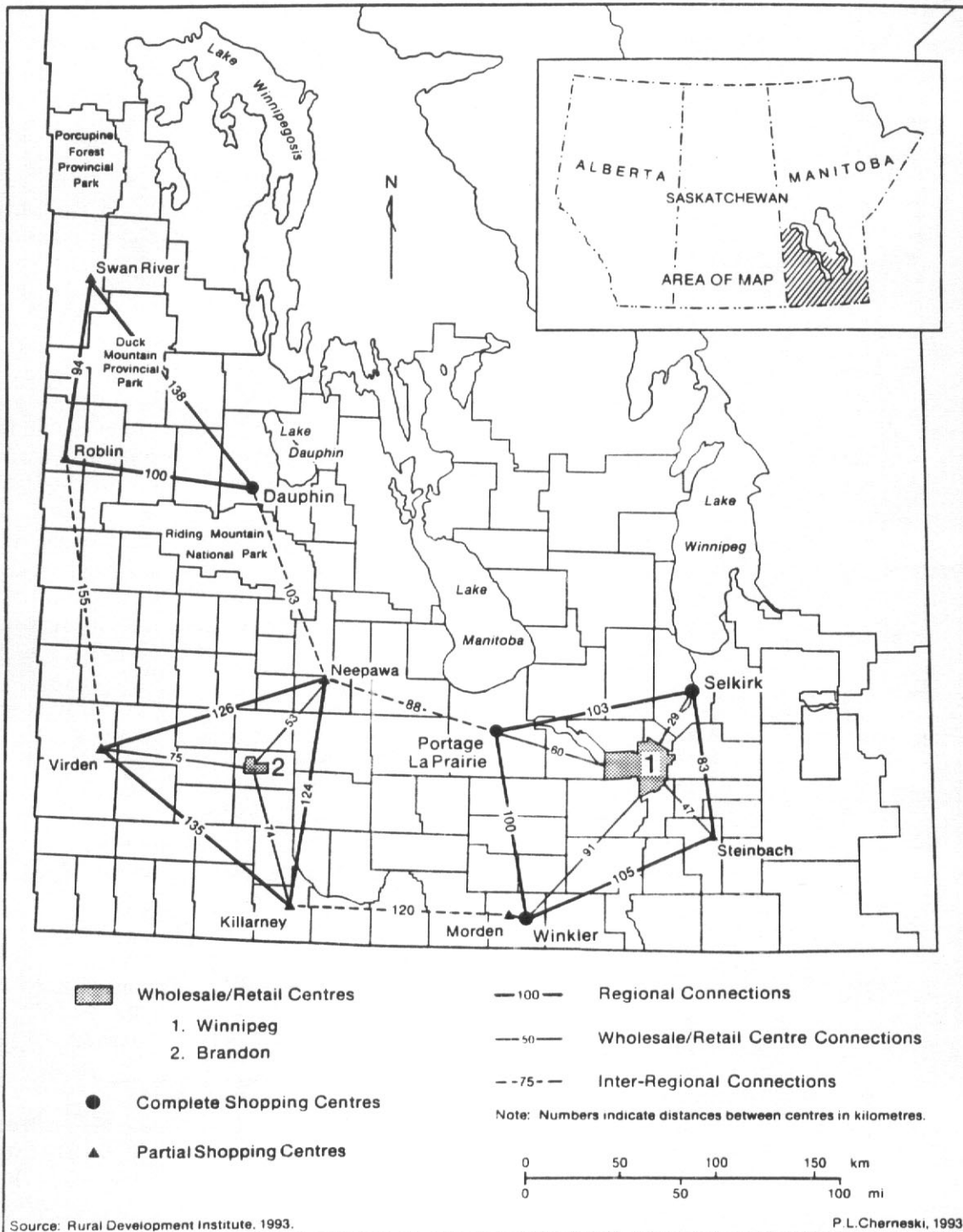


Figure 10

Wholesale-retail and Shopping Centres in Manitoba, 1986



The spacing of shopping centres around the wholesale-retail centres of Winnipeg and Brandon, however, does differ significantly. The average distance between Winnipeg and its four regional shopping centres ($\bar{X}=52$ km) is significantly less than that between Brandon and its three regional centres ($\bar{X}=67$ km) ($p<0.05$).

1991 Pattern Analysis

Analysis of central-place results for 1991 presents problems. The use of different data sources for information on businesses, and the inclusion of more than 200 smaller towns and villages necessarily results in a redefinition of the functional levels of many communities. Results are presented independently and are valid within the data framework. Comparison with other years, however, requires additional analysis and careful interpretation.

Winnipeg retained its position as Manitoba's only primary wholesale-retail centre and Brandon remained the only secondary wholesale-retail centre (Table 3 and Figure 11). The number of complete shopping centres increased to five, as Steinbach joined Portage la Prairie, Selkirk, Dauphin and Winkler in this category. The pattern of distribution of third level communities, therefore, changes little between 1986 and 1991 in spite of the differences in data input.

A large increase, however, occurred in the number of partial shopping centres in the 1991 analysis. Six of the seven centres identified in 1986 remained, and an additional 14 communities were classified as level four centres (Figure 11). Five new shopping centres are evident in the Greater Winnipeg Region, four in the Interlake Region (between Lakes Winnipeg and Manitoba), five in Southwestern Manitoba, and one in the Parklands, which is the only region that shows little change in pattern between 1986 and 1991.

The inclusion of 238 smaller centres in 1991 analyses obviously resulted in a resorting of the role of mid-sized towns. The greatest change appears to have occurred in the lower level (partial) shopping centre, and the higher level (full) convenience centre categories (Table 3). Because the data sets are widely divergent, the classification and pattern of distribution of towns at the partial shopping centre level must be scrutinized carefully if comparisons are to be made with 1966 and 1986.

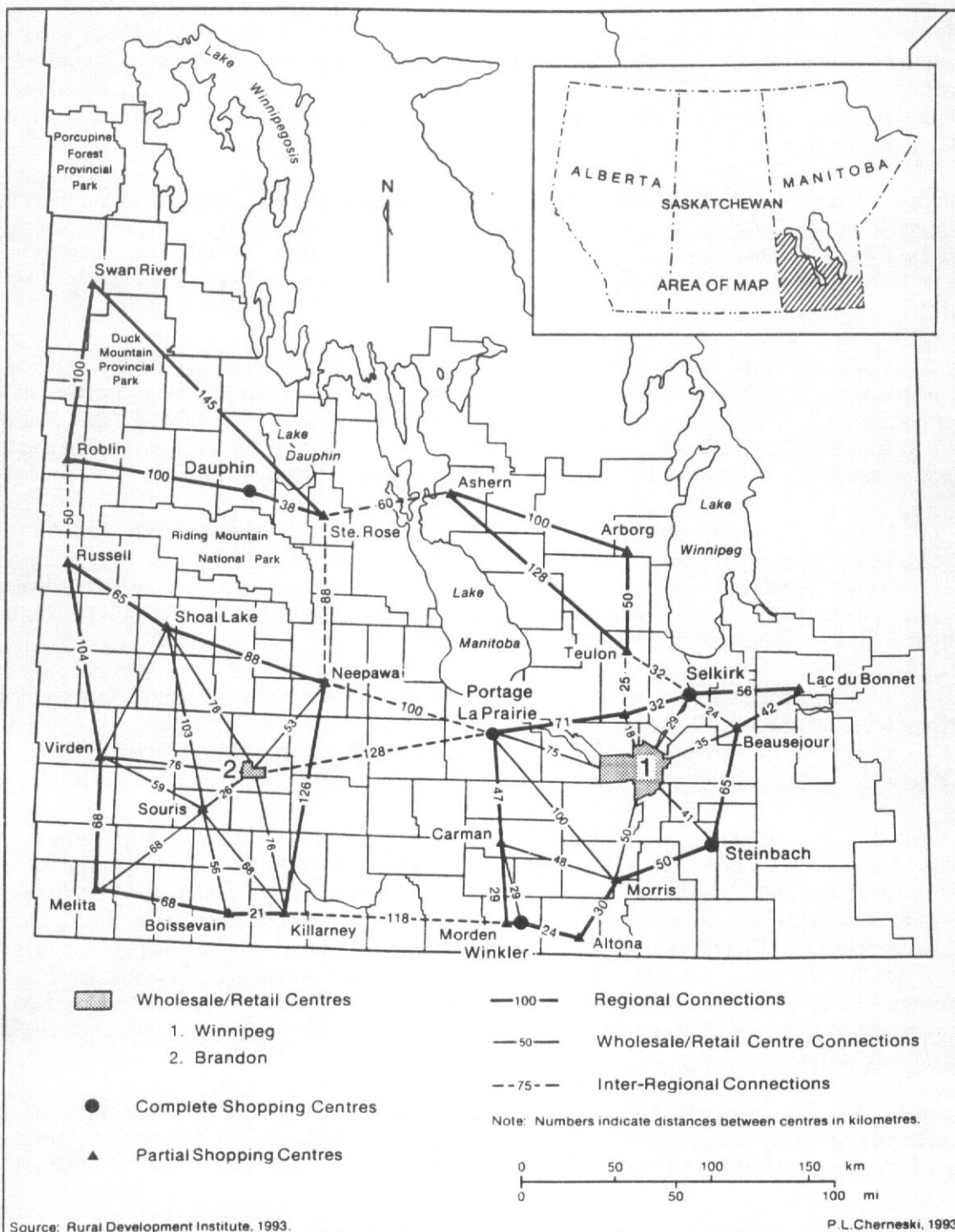
Utilizing the distance measurements illustrated in Figure 11, the pattern of communities that serve as the four highest level centres in 1991 was plotted for each region. Eastman has no communities that function as shopping centres. Within the Greater Winnipeg area, however, six shopping centres are evident. The average distance between centres is 36 km ($SD\pm 14$ km). The major centres are grouped to the northeast of Winnipeg.

The Central Region lies close enough to Winnipeg to evolve a trade centre pattern that would reflect proximity of a major wholesale-retail community. The City of Portage la Prairie has been the largest of the Province's shopping centres for decades, and controls the trade for the central and northern sections of the Central Region (Figure 11). A second cluster of five communities has evolved to serve the productive farming area of the southern Red River Valley near the U.S. border. Winkler is a complete shopping centre and the largest of the towns, while Morden, Altona, Carman and Morris are partial shopping centres. The northwestern section of the Central Region is served peripherally by Neepawa and Ste. Rose du Lac. The average spacing of shopping centres in the Central Region is 42 km, but the standard deviation of ± 28 km reflects the unusual pattern evident on Figure 11.

Westman is an extensive area dominated by agriculture and Brandon is a secondary wholesale-retail centre based on service to the agricultural sector. Eight partial shopping centres are identified in 1991. The average spacing of shopping centres is 71 km ($SD\pm 28$ km), and they are distributed throughout the region (Figure 11).

Figure 11

Wholesale-retail and Shopping Centres in Manitoba, 1991



The number and distribution of shopping centres in the Parkland Region did not change significantly between 1986 and 1991 (Figures 10 and 11). Ste. Rose du Lac was classified as a shopping centre using 1991 data, and serves the far southeastern portion of the region, but the original three centres of Dauphin, Roblin and Swan River retained regional dominance. The average spacing of communities is 96 km (SD±44 km).

For all of agro-Manitoba, therefore, there are two wholesale-retail and 25 shopping centres in 1991. The average spacing of communities is 60 km (SD±34 km) (using regional measurements including wholesale-retail centres). The number and spacing of major centres, however, varies considerably among regions. Thinly populated areas with poorer farmland (Interlake and Parkland) have centres spaced at approximately 100 km, good farmland areas with moderate population density (Westman) have centres spaced at approximately 75 km, while the diversified economies of the Central and Greater Winnipeg regions have centres at 40 km intervals.

The distribution of 249 convenience centres in agro-Manitoba apparently reflects the density of population of various regions. The Westman Region has 25 full and 41 minimum convenience centres serving a region of moderately dense but dispersed population (Table 4). The Interlake, Eastman, and Parkland regions, however, are thinly populated, and the number of convenience centres is low. The Central and Greater Winnipeg regions have a closely spaced high-density distribution of service centres, especially near Winnipeg and in the southern Red River Valley area.

The high number of convenience centres in Westman may partly offset the distances between larger communities in the region, and is partially a remnant from a high density of villages established during settlement. The low numbers of convenience centres in Parkland, Interlake and Eastman reflects dwindling population and areas with large expanses of parks, forested land, swamps and lakes.

Table 4. Number of convenience centres in Manitoba, 1991¹

Region	Convenience centres		
	Full	Minimum	Total
Westman	25	41	66
Central	14	47	61
Greater Winnipeg	15	40	55
Parkland	8	16	24
Eastman	7	17	24
Interlake	5	14	19
Totals	74	175	249

¹ Stabler and Olfert, 1992

Equating 1966, 1986 and 1991 Classifications

The 1966 and 1986 data sets are considered comparable because they are based on standardized community profiles, government statistics and Canada Census data. The 1991 input, however, is not directly comparable. Whereas each year's results provide valuable information, concern here is with interpreting the pattern of trade centres between the two earlier (limited) data sets and that of 1991.

There is no change among years in the primary and secondary wholesale-retail classifications. Winnipeg experienced continuous and significant growth throughout the 25 years, and solidified its position as Manitoba's only primary wholesale-retail centre. Brandon, on the other hand, maintained its position as the only secondary wholesale-retail centre, but actually lost population between 1986 and 1991.

The number of complete shopping centres expanded from two in 1966, to four in 1986, and to five in 1991 (Table 2). Based on population, the top four of these centres retained their rankings in size among all communities, while Winkler joined the top five shopping centres based on a 25-year population growth of 149 percent (Table 5). Portage la Prairie and Dauphin, however, decreased in population during the last 25 years, with Dauphin suffering considerable loss between 1986 and 1991. Similarly, Selkirk gained between 1966 and 1986, but dropped back slightly between 1986 and 1991. The other two complete shopping centres, Steinbach and Winkler, increased dramatically during all time intervals.

The number of partial shopping centres identified increased from three in 1966, to seven in 1986, and 21 in 1991 (Tables 2 and 5). The 1966 and 1986 classifications are comparable for the five centres involved. Selkirk moved up to a complete shopping centre between 1966 and 1986, while Neepawa and Steinbach remained as partial shopping centres. Morden, Killarney, Swan River, Roblin and Virden moved from full convenience to partial shopping centres between 1966 and 1986, and Winkler jumped two classes to a complete shopping centre. Six of the seven partial shopping centres recognized in 1986, retained this status in 1991. Eleven communities classed as full convenience centres in 1986 moved to partial shopping status in 1991, and four towns not involved in 1986 analyses were added in 1991.

Based on 1991 populations, 11 of the top 14 ranked shopping centres were in the original 1966 and 1986 analyses. This includes 6 of the 9 largest partial shopping centres and all complete shopping centres. When all shopping centres are ranked by population for 1966 and 1991, consistency in pattern is evident in a Spearman r_s of 0.964 ($df=23$, $p<0.01$). Only two of the 24 centres shifted rank by more than three places, with Winkler's population increase moving it from ninth to fifth largest, and Stonewall's increase of 90 percent moving it from sixteenth to tenth position.

Of interest, however, is the fact that 14 of the 24 shopping centres recognized in 1991 actually declined in population between 1986 and 1991 and five have fewer people than they did in 1961. Between 1986 and 1991, all four Parkland regional shopping centres declined, and all eight Westman shopping centres declined. Only the larger centres of Portage la Prairie and Selkirk declined in other regions. Conversely, five of six Central Region shopping centres and five of six Greater Winnipeg Region centres increased in population. Overall, average populations for the 24 shopping centres recognized in 1991 remained reasonably constant over 25 years. The average population in 1961 was 3,061 ($\pm SE 625$), in 1986 it was 3,281 ($\pm SE 670$) and in 1991 it was 3,296 ($\pm SE 673$). Apparent stability, however, is a function of differential gains and losses among regions, with growth virtually restricted to the Greater Winnipeg and adjacent Central regions.

As mentioned previously, the inclusion of 249 primarily smaller centres in the 1991 analyses is suspected to have caused a downward shift in the criteria for recognizing a shopping centre. To test for this possibility, as opposed to real changes in centre functions, the populations of the original eleven shopping centres recognized in 1986 were compared to the populations of other communities entering the 1991 cluster. The average population of 1986 shopping centres in 1991 was 5,946 ($\pm SE 1093$), while that of newly recognized centres was 1,625 ($\pm SE 217$). The difference is significant ($t=4.20$, $p<0.01$), and subsequent non-parametric analyses revealed the two groups as independent (Mann-Whitney criteria; $p<0.05$). In the Westman Region where the greatest change in classification occurred, for example, the three largest shopping centres in 1991 are those recognized in 1986.

Table 5. Comparisons of populations of shopping centres identified in 1991, with populations in 1966 and 1986

Shopping centres	Class	Population			% change		Rank	
		1966	1986	1991	1966-91	1986-91	1966	1991
Complete shopping centres								
Portage la Prairie	O	13012	13198	13186	-1.34	-0.01	1	1
Selkirk	O	9157	10013	9815	7.19	-1.48	2	2
Dauphin	O	8655	8875	8453	-2.33	-4.75	3	3
Steinbach	O	4648	7473	8213	76.70	9.90	4	4
Winkler	O	2570	5926	6397	148.91	7.95	9	5
Partial shopping centres								
Morden	O	3097	5004	5273	70.26	5.38	7	6
Swan River	O	3470	3946	3917	12.88	-0.73	5	7
Neepawa	O	3229	3314	3258	0.90	-1.69	6	8
Altona	N	2129	2958	3060	43.73	3.45	11	9
Stonewall	N	1577	2349	2997	90.04	27.59	16	10
Virden	O	2933	3054	2897	-1.24	-5.14	8	11
Beausejour	N	2214	2535	2633	18.93	3.87	10	12
Carman	O	1930	2500	2567	33.01	2.70	12	13
Killarney	O	1836	2318	2163	17.81	-6.69	13	14
Roblin	N	1617	1913	1834	13.42	-4.13	15	15
Souris	N	1829	1751	1662	-9.13	-5.08	14	16
Russell	N	1511	1669	1616	6.95	-3.18	17	17
Morris	N	1339	1613	1616	20.69	0.19	19	18
Boissevain	N	1473	1572	1484	0.75	-5.60	18	19
Melita	N	1101	1239	1134	3.00	-8.47	20	20
Lac du Bonnet	N	886	1021	1076	21.44	5.39	22	21
Arborg	N	891	1018	1039	16.61	2.06	21	22
Tuelon	N	817	953	1016	24.36	6.61	24	23
Ste Rose du Lac	N	792	1030	1008	27.27	-2.14	25	24
Shoal Lake	N	836	832	784	-6.22	-5.77	23	25
Ashern (RM Siglunes)*	N	1623	1540	1560	unk	unk	unk	unk

Class: O = originally a shopping centre in 1986

N = newly classified as a shopping centre in 1991

* Ashern is not censused separately from the Rural Municipality of Siglunes

Earlier analyses indicate that the number of businesses is directly related to population. Accordingly, data suggest the 1986 distribution of shopping centres (Figures 10) reflects the major pattern within the 1991 data (Figure 11). Changes in most communities, therefore, do not occur rapidly. The rapid growth in a few communities is anomalous, rather than typical. Also, evidence suggests that growth may occur only in the Greater Winnipeg and south-Central Regions, with all other regions either remaining stable or showing decline. The greater number of shopping centres recognized in 1991 appears to be the result of differences in the data matrices rather than changes in functions of the centres involved.

ANALYSIS AND DISCUSSION

The restructuring of agriculture has had profound effects on the rural economy. Although still a major income and employment generator, the agricultural industry was in a state of "... absolute decline in its capacity to generate jobs" as early as the 1960s (COMEF, 1963;III-2-6). Coupled with concomitant population loss, agriculturally-dependent communities are most at-risk in the rural economy. The general economic malaise of agro-Manitoba, therefore, results directly from the fact that the entire region is dependent on agriculture.

It is within this framework that one must interpret the restructuring of rural communities. Between 1880 and 1930, a succession of small, quickly-built villages, strung along railroads at 8-10 mile intervals, was broken only by larger centres at 110-130 mile intervals. The farm population peaked during the 1930's, and between 1930 and 1970, "certain communities, widely spaced began to develop into embryonic 'farm cities' subordinating the remainder of the territory... to them" (Zimmerman and Moneo, 1971).

The restructuring of the community system, therefore, began as soon as original settlement waned. Many studies between 1900 and 1930 recognized the growth of some centres at the expense of others (Sarbit and Greer-Wootten, 1980). Also, Fuguitt (1971) reported that although all sizes of communities may grow, larger communities grow faster. He also noted that the proportion of places growing within all size categories is greater within 50 miles of a major city. Within these earlier observations lie explanation for much of the pattern of communities within the central place hierarchy in Manitoba.

Morton (1967:477) summarized the socio-economic consequences of rural restructuring that "came together" in the 1960's:

The little service town of the elevator, the grocery store, the post office -- the tanktown of railway days -- was doomed. Motor cars on the new highways took shoppers [while] trucks took grain and livestock to the bigger towns.

Thousands of little investments, little businesses, little jobs, homes, were threatened; many ended, others knew the slow erosion of inescapable poverty.

Stabler and Olfert (1992) still consider the changing expectations and time-space improvements (transportation) to be major determinants of rural people's behavioral use patterns within the hierarchy of communities available. Use patterns, in turn, affect each community's position and viability within the hierarchy of central places.

Recognizing the restructuring of rural centres, the Government of Manitoba established the Committee on Manitoba's Economic Future (COMEF) in 1961. In a 1963 report, COMEF recognized the consolidation of farms and improvement of the transportation system as the two factors causing demise of smaller towns and villages. The outmigration of young residents (20-44 years) was most evident during the 1960's. Although the consolidation of communities into larger units was viewed as "more efficient", the report also recognized that the process was likely to continue: simply stated, those communities that had benefited from early consolidation could, in turn, be victims of even larger centres in the future.

In 1969, government recognized that efforts to stimulate small businesses had, at best, maintained the status quo in rural areas. Efforts shifted toward regional development and were based on the fact that "regions" have more attributes and are more attractive to industries than are single centres. The Interlake and Parklands were areas of greatest concern, and were part of a program that called for "balanced regional development" (TED, 1969).

Perhaps the most important statement in the TED Report (1969:422) is that "... outside of Metropolitan Winnipeg, manufacturing accounted for a small fraction of the labour force, thus leaving agriculture as the dominant source of employment..." The rapid and on-going depopulation of both the Interlake and Parkland (MacLean and Rounds, 1991) regions attests to the failure of non-agricultural development and the effects of agricultural dependency as that industry restructures. This, in turn, accounts for the low number and wide-spacing of communities in these regions. Population density partially determines the total number of low-level (convenience) centres, and is instrumental in the wide-spacing (175 km) of Dauphin and Swan River in the Parkland region (Sarbit and Greer-Wootten, 1980).

Conversely, all functional levels of communities are spaced more closely in more densely settled regions. Shopping centres such as Virden, Neepawa and Killarney are about 75 km from Brandon, the secondary wholesale-retail centre for western Manitoba. These communities provide the same but fewer services than Brandon, are similar among themselves, but are viable because of a denser network of convenience centres in the region.

A similar pattern is evident in the Winnipeg-Red River Valley region. Populations in these areas are increasing, however, and as centres grow and move up in the functional hierarchy, distances between equivalent centres may decrease.

Sarbit and Greer-Wootten (1980) noted a number of gaps in the community network between 1961 and 1971. Fourth-order communities (partial shopping centres) were missing in the regions to the northwest of Brandon (SW of Dauphin), to the southeast of Brandon (SW of Portage la Prairie), and in the Interlake. Fifth-order (full convenience centres) communities also were lacking in these gaps. Conversely, fourth-order centres increased in the Winnipeg region, with the only exception being that of Killarney in the Southwest. Centres that appeared to be moving up in the hierarchy were Shoal Lake and Birtle to the northwest of Brandon, Ste. Rose, Grandview and Gilbert Plains in the Dauphin region, and Glenboro, Pilot Mound and Manitou to the southeast of Brandon. Since 1971, however, most of these centres have either stagnated or declined.

Stabler and Olfert's 1991 calculations suggest that Russell and Shoal Lake have improved in functional positions to partially fill the void northwest of Brandon, but neither centre has sustained significant growth. The gap between Killarney and Morden-Winkler and Brandon and Portage la Prairie, however, has not been filled. Reasons for this may relate to either low regional incomes that preclude survival of higher order services, or the strong drawing power of Brandon, Portage la Prairie or Winnipeg which offer most or all services (Sarbit and Greer-Wootten, 1980).

The relationship between Winnipeg and all other centres in Manitoba has not changed between 1961 and 1991. If anything, the statement made about Winnipeg's position in 1961 and 1971 is even more appropriate today:

Winnipeg is so thoroughly and completely in control of the entire system, so much larger in every way than Brandon, that, in a total system perspective, Brandon is more like remaining places than [it is like] Winnipeg (Sarbit and Greer-Wootten, 1980:64).

In turn, Brandon was described as the only other place with "truly urban" services and characteristics. All other communities, even the larger third-order complete shopping centres, resemble large farm or rural settlements. In essence, therefore, Winnipeg has, and will continue to stand alone as the single primary wholesale-retail centre in Manitoba, and Brandon will retain its status as the only secondary wholesale-retail centre. Winnipeg continues to grow reflecting both its historical dominance and growth in its surrounding area. Brandon, on the other hand, has ceased growing, possibly reflecting continued decline in population in southwestern Manitoba. Similar patterns are evident in complete shopping centres, as Dauphin reflects a declining region, Portage la Prairie a stable region, and Winkler and Steinbach an expanding region.

A comparison of community hierarchies between Saskatchewan and Manitoba is instructive (Table 6). Based on similar (but not identical) data bases, the wholesale-retail level has remained unchanged over the last 30 years. The difference in number of secondary wholesale-retail centres reflects historical differences in the two provinces in terms of sizes of centres, but the fact that no change has occurred in numbers reflects stability in the high level functions in these communities.

Table 6. Summary of Saskatchewan and Manitoba Trade Centre Systems, 1961-1991

Functional classification	Number of centres					
	Saskatchewan ¹			Manitoba		
	1961	1971	1990	1961 ²	1971 ²	1991 ¹
Primary wholesale-retail	2	2	2	1	1	1
Secondary wholesale-retail	8	8	8	1	1	1
Complete shopping centres	29	22	6	2	2	5
Partial shopping centres	99	30	46	15	16	22
Full convenience centres	189	136	117	51	47	74
Minimum convenience centres	271	400	419	243	246	176

¹ Source: Stabler, Olfert and Fulton, 1992

² Source: Sarbit and Greer-Wootten, 1980

Saskatchewan had a number of complete shopping centres that lost functions between 1961 and 1991, and fell into the partial shopping centre category by 1991. Manitoba had only two complete shopping centres in 1961 and 1971, but three others moved up to this level in 1991. Similarly, six centres moved up to partial shopping centres between 1971 and 1991. These patterns also are evident in the restricted number of communities tested in 1966 and 1986 (Table 2). At the shopping centre level, however, 52 communities serve Saskatchewan, while only 27 serve Manitoba. Part of the difference lies in the dominance of Winnipeg in the agro-Manitoba system, and part is explained by the distribution of people over a much larger area in agro-Saskatchewan. The data bases are less comparable at the convenience centre level, but it appears that Saskatchewan's smallest centres are decaying more rapidly than those in Manitoba.

Restructuring Within Communities

Information gathered for 1966 and 1986 clearly indicate that changes are occurring within the business matrices of communities as well as among the functional roles of centres. This would be expected as the chain reaction of responses is initiated by gradual depopulation in hinterlands. Owing to the fact that each type of business has a different population threshold for survival, changes occur differentially within communities. High threshold businesses clearly have declined in rural communities, as auto and farm implement dealerships and bulk fuel outlets decreased. This clearly reflects loss of rural residents in the farm sector.

Because most communities in our 1966 and 1986 data were the larger centres that experienced population growth or stability, a number of non-farm dependent businesses expanded. The increase in auto service centres likely was a response to fill the service void created when major dealerships collapsed. Most other expansions occurred in consumer and professional service categories, reflecting the demands of an urbanizing society based on consumption, and a service economy.

Stabler and Olfert (1992) review their work and that of Sarbit and Greer-Wootten (1980) and compare Manitoba with Saskatchewan for internal structure of rural communities. There appears to be a threshold of 40 functions and 70 establishments between 1961 and 1981 in both Provinces. Communities above this level tended to be either stable or growth-oriented, while communities with fewer functions and establishments tended to be reclassified downward in the trade centre system. Communities below this level in Saskatchewan, however, more commonly decreased than did those in Manitoba (Table 6).

Stabler and Olfert (1992) presented data on the average number of businesses for centres in each functional classification level for Manitoba in 1991 (see Appendix B). Their conclusions are that centres in the three highest classes in both Saskatchewan and Manitoba offer a full range of consumer and producer services and educational and health services. They also contain many producers. Manitoba's partial shopping centres, however, provide substantially fewer business services and fewer higher order consumer services. Health care services also differentiate between partial and complete shopping centres. No less than 83 percent of Manitoba's producers are located in the 29 communities in the wholesale-retail and shopping centre categories.

The 176 minimum convenience centres, conversely, do not have a single function in common, "... and no longer perform any meaningful role in the trade centre system" (Stabler and Olfert, 1992:19). Full convenience centres (n=74) have groceries, gasoline and lodging in common, but agricultural services and other businesses are gone for the most part. Combined, the two convenience centres levels contain 250 places (90 percent), but house only 17 percent of the province's producers. Manitoba's situation is "strikingly similar" to that in Saskatchewan in 1991.

Theoretical Considerations

Our use of population-business correlations is appropriate only if communities are market centres for their surrounding regions. Most agro-Manitoba towns and villages are true market centres, but to the extent that a few provide specialized functions, our correlations will be weakened (Sarbit and Greer-Wootten, 1980). Earlier correlations derived from 331 centres were $R^2=0.68$ ($p<0.01$) in 1961, and $R^2=0.73$ ($p<0.01$) in 1971. The increase in strength of the relationship over ten years suggested "... slightly better overall adjustment between centrality and population size ..." (Sarbit and Greer-Wootten, 1980:51). The relationship is not strictly linear and the smaller places had "more variance". The changing patterns of growth regionally were identifiable during early years.

Our correlations were very strong at $R^2=0.96$ ($p<0.01$) in both 1966 and 1986 (Figure 2). Part of the explanation lies in the fact that the limited sample of 41 communities removed much of the variance that typifies the smaller communities. The high values also suggest that the 41 larger communities are indeed "market centres" that should provide services in proportion to their market areas.

When broken into size categories, however, the population-number of businesses relationship deteriorates. In mid-size communities R^2 decreased from 0.63 in 1966 to 0.51 in 1986, and in small communities R^2 decreased rapidly from 0.63 in 1966 to 0.22 in 1986. Our results, therefore, repeat those observed earlier in that variability increases as size of centres decreases. The fact that the relationships decreased significantly among the smaller centres in our limited sample suggests that the performance of these places is becoming more variable through time, and their functional positions likely will change in years ahead. Those communities that have been declining likely will drop down in the hierarchy, and those that have been gaining likely will continue to gain. This pattern should hold because most places are acting as market centres.

On a broader level, one can question the placement of communities in a tiered system of classes. Discrete classification often masks what is in reality, a continuum of centres ranging from smallest to largest, and providing fewest to most functions respectively (Marshall 1971, Beavon 1977). The purpose of classification is to reduce a complex system to something more understandable. As long as reality is not highly skewed a hierarchical classification can represent relationships more clearly, and assist in policy formulation. A continuum, on the other hand, allows identification of each centre in its position relative to all other communities, and eliminates the question of whether a community is located near the center or margins of a class within a hierarchy.

Data input on broad human settlement patterns usually involves constant geographic boundaries, but there always are problems of measuring and standardizing numbers and incidences of business and services. This problem is evident between our data using community profiles and other data that includes use of standard directories. Our data (community profiles) typically included more businesses in communities than did Dunn and Bradstreet's "Reference Book" and Stabler (personal communication) suspected that this was true. In spite of these differences, the hierarchies were similar at the higher functional levels, and varied only in the lower level classes.

The greatest variation occurred in the partial shopping centre category, but most of this difference is explainable by the inclusion of many more smaller communities in both Greer-Wooten's and Stabler's work. Because Central Place Analysis sorts all communities relative to each other, the inclusion of hundreds of small centres necessarily reorders the communities above them. For this reason, more communities fell into Stabler's partial shopping and full convenience centre classes than were evident in 1966 and 1986 analyses. There is, however, virtually no disagreement between the two classifications in that the communities that are common to both are arranged similarly (see Table 5). If community profile data had been available for more communities, the results likely would have been even more coincident.

In essence, we believe that the hierarchy of trade centres is consistent and reasonably well-defined by available information in all years presented by various studies (1961, 1966, 1971, 1981, 1991). Each community has its own history of growth, stability or decline. Each region has its own pattern of changing relationships among its trade centres, with whole regions showing growth or decline in some instances. Overall, Manitoba wholesale-retail and full-convenience centres are established and have been persistent. With the exception of Winkler (which moved up two levels over 30 years), no community had increased or decreased in position by more than one functional level over 30 years. Community evolution, therefore, is gradual in the agricultural area of southern Manitoba. The smallest communities will continue to decline, and the strongest will stabilize or grow. Although some communities in all regions may change functional positions "relative" to their surrounding centres, absolute growth in both centres and on a regional basis is evident only in the Winnipeg-Red River Valley region. Even high level communities are, at best, stable in all other areas (eg. Brandon, Dauphin, Portage la Prairie).

The pattern of central places in Manitoba, therefore, is defined well enough and changes slow enough to allow for policy and infrastructural decisions that are most functional during times of fiscal restraint. Recent trends toward regionalization of services reflect the reality of a depopulating rural economy with fewer but larger centres. This restructuring of not only each community, but also the entire system of communities, is no less obvious nor important than the original growth and settlement period on the Prairies. Just as changes in transportation and technology enhanced original settlement, they now work hand-in-hand to change the existing pattern of human occupation and interaction.

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APPENDIX A

Manitoba communities in the minimum convenience category

1966

Altona
Birtle
Carberry
Deloraine
Emerson
Gilbert Plains
Gladstone
Glenboro
Grandview
Hamiota
Lac du Bonnet
Manitou
Melita
Morris
Pilot Mound
Powerview
Rivers
Riverton
Russell
Souris
St. Pierre
Ste. Rose
Stonewall
Teulon

1986

Gilbert Plains
Lac du Bonnet
Pilot Mound
Powerview
Riverton

1991¹

Alexander
Alonsa
Altamont
Angusville
Anola
Arden
Argyle
Arnaud
Aubigny
Austin
Bacon Ridge
Bagot
Balmoral
Basswood
Belmont
Bethany
Binscarth
Birch River

Birds Hill
Birnie
Bissett
Blumenfeld
Bowsman
Brookdale
Camperville
Clandeboye
Clanwilliam
Clearwater
Cowan
Crane River
Cypress River
Darlingford
Domain
Douglas
Duck Bay
Dunrea
Durban
East Selkirk
Eden
Elgin
Elma
Fannystelle
Fork River
Forrest Station
Foxwarren
Fraserwood
Gardenton
Garson
Giroux
Glenora
Gnadenhal
Goodlands
Grand Marais
Grande Pointe
Great Falls
Gretna
Griswold
Grosse Isle
Gunton
Gypsumville
Haskett
Haywood
High Bluff
Hnausa
Hochfeld
Hodgson
Holland
Horndean
Inglis
Inwood

Kemnay
Kenton
Kenville
Kleefeld
Kola
Komarno
La Riviere
La Salle
Langruth
Lauder
Laurier
Letellier
Libau
Lowe Farm
Lyleton
Macdonald
Mafeking
Manigotagan
Marchand
Mariapolis
Mather
Matlock
McAuley
McTavish
Medora
Middlebro
Miniota
Minto
Mitchell
Moosehorn
Napinka
Neubergthal
New Bothwell
Newdale
Newton
Ninga
Oak Bluff
Oak Lake
Oak Point
Oak River
Oakburn
Oakville
Ochre River
Onanole
Ostenfeld
Osterwick
Otterburne
Petersfield
Pine River
Piney
Pipestone
Plum Coulee

Plumas
Poplar Point
Poplarfield
Rapid City
Rathwell
Reinland
Richer
Riding Mountain
River Hills
Roland
Roseisle
Rosenfeld
Rosengart
Rosetown
Ross
Rosser
San Clara
Sandy Hook
Schanzenfeld
Schoenwiese
Sidney
Sifton
Silver Falls
Sommerfeld
South Junction
Sperling
Springstein
St. Ambroise
St. Eustache
St. Francois Xavier
St. Georges
St. Joseph
St. Lazare
St. Leon
St. Malo
Starbuck
Ste Genevieve
Ste. Agathe
Steep Rock
Stoney Mountain
Stuartburn
Sundown
Thornhill
Tolstoi
Treesbank
Tyndall
Victoria Beach
Vivian
Vogar
Wellwood
Westbourne
Woodlands

¹ Stabler and Olfert, 1992

APPENDIX B

(from Stabler and Olfert, 1992)

Table 7. Average number of businesses of various types in Manitoba trade centers - 1991

Type of Business	176	74	22	5	1	1
	Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale/Retail	Primary Wholesale/Retail
All Consumer Serv	2.29	11.47	38.27	115.20	365.00	3680.00
General store	0.34	1.03	2.00	3.40	4.00	27.00
Grocery store	0.24	1.22	2.95	5.20	23.00	177.00
Special food	-	0.36	1.23	2.40	13.00	92.00
Auto sales	-	0.27	2.64	5.00	17.00	88.00
Gas station	0.36	1.34	2.32	7.00	11.00	111.00
Clothing store	-	0.50	3.77	8.00	22.00	229.00
Furniture store	-	0.19	0.91	3.80	5.00	63.00
Home furnishing	-	0.50	2.18	9.80	32.00	185.00
Restaurant	0.21	0.88	3.18	9.00	30.00	412.00
Drug store	-	0.36	1.41	2.60	5.00	62.00
Special retail	-	0.59	3.64	14.00	36.00	447.00
Credit agency	0.16	0.92	3.45	17.60	72.00	1047.00
Hotel	0.22	1.07	1.91	3.00	12.00	70.00
Laundries	-	-	0.18	1.00	2.00	30.00
Personal services	-	0.14	0.68	2.80	4.00	115.00
Auto repair	0.20	0.78	2.36	8.00	35.00	140.00
Car wash	0.22	0.93	2.59	8.60	29.00	216.00
Recreation	-	0.39	0.86	4.00	13.00	169.00
All producer serv	0.72	3.55	14.09	26.60	126.00	2341.00
Warehousing	-	-	0.73	3.00	12.00	185.00
Farm equipment	0.12	0.59	3.09	4.40	13.00	27.00
Bulk fuel	-	0.47	2.41	2.40	6.00	15.00
Wholesale	0.31	1.08	4.00	9.40	62.00	1411.00
Building materials	0.16	1.15	3.32	4.00	12.00	82.00
Business services	-	0.19	0.55	3.40	21.00	621.00
All producers	1.66	6.49	21.68	59.20	185.00	2888.00
Construction	0.86	3.45	11.14	28.40	106.00	1480.00
Manufacturing	0.35	1.65	5.95	20.20	56.00	1157.00
Transportation	0.45	1.39	4.59	10.60	23.00	251.00
Bank*	18.00	58.00	86.00	100.00	100.00	100.00
Doctor*	3.00	59.00	100.00	100.00	100.00	100.00
Hospital*	1.00	46.00	95.00	100.00	100.00	100.00
Special Health Care*	-	42.00	95.00	100.00	100.00	100.00
High School*	-	80.00	100.00	100.00	100.00	100.00
Grain Elevator*	32.00	61.00	86.00	80.00	100.00	100.00

Note - value less than .10 omitted.

* For these variables the percent of communities offering selected facilities is shown.

Table 8. Percent of communities by functional category offering selected facilities in Manitoba - 1991

Type of Center	Bank	Doctor	Hospital	Special Care	High School	Grain Elevator
Minimum convenience	18	3	1	-	-	32
Full convenience	58	59	46	42	80	61
Partial shopping	86	100	95	95	100	86
Complete shopping	100	100	100	100	100	80
Secondary wholesale-retail	100	100	100	100	100	100
Primary wholesale-retail	100	100	100	100	100	100

Table 9. Average number of business of various types in Saskatchewan trade centres - 1990

Type of Business	419	117	46	6	8	2
	Minimum Convenience	Full Convenience	Partial Shopping	Complete Shopping	Secondary Wholesale/Retail	Primary Wholesale/Retail
All Consumer Serv	2.41	12.42	44.00	123.83	309.25	2057.50
General Store	0.33	0.96	2.50	3.33	5.00	19.50
Grocery Store	0.25	1.20	3.70	6.67	16.50	72.50
Special Food	-	0.37	1.59	4.17	8.25	55.50
Auto Sales	-	0.35	1.80	4.17	10.88	46.50
Gas Station	0.29	1.39	3.57	6.83	19.13	99.00
Clothing Store	-	0.56	3.50	13.33	20.63	147.00
Furniture Store	-	-	0.87	2.50	5.38	42.00
Home Furnishing	-	0.23	1.89	7.50	23.25	142.00
Restaurant	0.16	1.16	3.65	13.00	42.25	342.50
Drug Store	-	0.42	1.52	2.67	6.63	34.50
Special Retail	-	0.44	3.46	12.33	36.75	246.00
Credit Agency	0.27	1.32	3.96	16.17	39.88	388.00
Hotel	0.47	1.40	3.72	8.17	15.88	51.00
Laundries	-	-	0.28	0.83	2.25	22.00
Personal Serv	-	-	0.78	2.33	6.88	46.00
Auto Repair	0.13	0.62	1.98	6.17	20.38	129.00
Car Wash	0.12	0.45	1.63	5.33	17.63	120.50
Recreation	-	0.11	1.02	3.50	5.63	44.00
Bank or C.U.	0.39	1.44	2.59	4.83	6.12	10.00
All Producer Serv	0.62	4.39	12.20	32.83	91.75	1010.00
Warehousing	-	-	0.37	2.50	13.13	79.00
Farm Equipment	0.12	0.92	2.78	5.50	7.88	34.50
Bulk Fuel	0.18	1.28	2.41	4.33	6.88	11.50
Wholesale	0.17	0.68	2.35	8.67	34.75	544.00
Building Materials	0.14	1.36	3.65	7.17	14.25	68.50
Business Services	-	0.15	0.63	4.67	14.88	272.50
All Producers	0.84	4.25	13.78	39.33	131.63	1146.00
Construction	0.48	2.47	7.74	21.50	70.75	641.00
Manufacturing	0.19	0.96	3.59	11.67	33.88	358.00
Transportation	0.17	0.82	2.46	6.17	27.00	147.00
Doctor*	-	87.00	100.00	100.00	100.00	100.00
Hospital*	-	49.00	91.00	100.00	100.00	100.00
Special Health Care*	-	30.00	96.00	100.00	100.00	100.00
High School*	21.00	89.00	98.00	100.00	100.00	100.00
Grain Elevator*	66.00	94.00	98.00	100.00	100.00	50.00

Note: Values less than 0.10 omitted.

* For these variables the percent of communities offering selected facilities is shown.

