

The Economic Impacts of Agriculture on the Economy of Frontenac, Lennox & Addington and the United Counties of Leeds and Grenville

Socio-Economic Profile and Agriculture-Related Business Survey

FINAL REPORT



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Executive Summary

Rural Ontario has experienced enormous change in the last fifty years. While the rural population has become predominantly non-farm based, the structure of the rural economy has experienced a major transformation with service sector jobs now exceeding the number of jobs in agriculture. One of the most visible indicators of change has been the steady decline in farm numbers and farm jobs. In the wake of these events, many rural areas appeared to take the position that agriculture was a fading industry. As a result, efforts by economic development agencies have tended to support strategies that focus on service and secondary industries.

Other indicators however, show that agriculture is a growth industry. Indeed, between 1986 and 1996, farm gate sales in Ontario rose from \$5,511 million to \$7,778 million (a growth rate of 3.5% per year). Furthermore, the simultaneous increase in farm gates sales and decline in farm jobs implies an increase in the productivity of farm workers and more capital intensive farm operations. This pattern of growth caught the attention of many individuals and interest groups from the agricultural sector who felt that the importance of agriculture to the rural economy was being understated.

Consequently, a number of Ontario counties initiated economic impact studies on the broader role of agriculture in their areas. The study in Frontenac, Lennox and Addington and the United Counties Leeds and Grenville, represents the sixth study of its kind as overseen by Dr, Harry Cummings, a professor in the School of Rural Planning and Development at the University of Guelph. The first study was conducted in Huron County between 1996 and 1998 where the research methodology was initially developed. The second study was conducted in 1998 for the combined counties of Prescott, Russell, Stormont, Dundas and Glengarry (PRSD&G). Subsequent impact studies have been completed for the counties of Simcoe, Lambton and Perth and studies are presently underway in Middlesex, Oxford, Elgin, Lanark, Renfrew and Ottawa Carleton.

As in the other studies that have been completed, the basic focus of this research is on sales and jobs related to agriculture, directly or indirectly. The study involves a combination of “economic base” and “input-output” methods and relies on data collected

from Statistics Canada, the Ontario Ministry of Agriculture, Food and Rural Affairs, previous impact studies, and agriculture-related businesses located in the study area. In addition to describing the role of agriculture in the study area economy, the report provides insights into the variable nature of agriculture across the study area. A discussion of related socio-economic conditions is also presented in the report.

Data is presented for each of the four counties in the study area, for the Eastern Ontario region as a whole and for the province of Ontario. Data is also provided at the census subdivision (township) level for some variables. Wherever appropriate, the results of the work in the study area are compared to the results that came out of the other economic impact studies.

The jobs and sales data compiled by this study indicates that there are 11,581 jobs (8% of the study areas' total labour force) tied to agriculture in Frontenac, Lennox and Addington and the United Counties of Leeds and Grenville and over \$534 million in sales from farms and businesses that buy from and sell to farms per annum. The employment and sales expenditure multipliers indicate that for every on-farm job in the study area, there are an additional 1.7 jobs off the farm in the wider economy, and for each dollar in farm gate sales, there are \$1.90 in sales by businesses that deal with farmers. Further details are contained in the report.

The first component of the study focuses on a review of secondary data on the economy of the study area. Between 1991 and 1996, the study area experienced a 6% increase in population which is slightly below the pace of growth experienced in the Eastern Ontario region¹ and the province of Ontario. However, several townships within the study area experienced growth rates in excess of 20%. Overall, the smaller communities and rural areas of the study area appear to be experiencing a higher rate of population growth than the large urban centres.

There were 133,370 employees in the study area in 1996, almost equivalent to the number of employees recorded in 1991. Grenville County was the fastest growing economy in terms of employment between 1991 and 1996 while Frontenac and Lennox &

¹ Eastern Ontario Region includes: Frontenac County, Lanark County, Leeds and Grenville United Counties, Lennox and Addington County, Ottawa-Carleton Regional Municipality, Prescott and Russell United Counties, Renfrew County, and Stormont, Dundas and Glengarry United Counties.

Addington both experienced a decline. Jobs in manufacturing and education services accounted for most of the growth in Grenville while job losses in Frontenac and Lennox and Addington were primarily located in government services and construction industries. A review of personal income levels shows that the study area has a smaller percentage of families in the lower income range (under \$30,000) than the province as a whole as well as a smaller percentage in the higher income range (\$70,000 or more). Conversely, the study area has a larger proportion of families that could be classified as belonging to the middle income group.

The census data show that jobs in retail and service industries are large in absolute numbers. The public service sector in particular (government, health and social services, and education) is an important component of the local economy, accounting for 30% of the total employment in the study area. Manufacturing is also a major employer in the study area. It appears that manufacturing is largely concentrated in a few urban centres in the southern portion of the study area. This is not the case with the manufacturing sector in Huron County where it was observed to have a strong presence throughout the region in many of the smaller communities. Manufacturing firms in Huron County have clearly benefitted from pursuing linkages with agriculture. In some instances, businesses have built upon their established trade in agri-related goods and expanded into products for other industrial sectors. When looking at promoting industrial development in the study area, planners, policymakers and business interests should examine the opportunities associated with the local agriculture sector and communities outside the traditional centres of growth.

Manufacturing was a growth sector for the study area between 1991 and 1996 with job gains centered in Leeds and Grenville County. The study area also experienced job increases in the retail and wholesale sectors. Job gains in manufacturing and retail are notable because they occurred at a time when the provincial economy experienced substantial job losses in these sectors. In contrast, jobs in the public service sector declined by just over 5% which is consistent with trends at the provincial level.

Agriculture in the study area did not experience the types of employment fluctuations that occurred in other sectors of the economy but rather maintained a degree of stability between 1991 and 1996. While the province experienced a 6.3% decline in agricultural jobs, farm jobs in the study area declined by only 1.6%. It is important to note that some regions of the study area (Frontenac and Grenville) actually recorded job gains

in the agriculture sector. Direct employment in agriculture accounts for 3.24% of the total labour force in the study area, a larger share than is the case for the Eastern Ontario region (2.48%) and Ontario (2.43%).

Agriculture production in the study area is diverse and there is considerable variation in the type and intensity of production across the region. Local bio-physical conditions play a major role in producing this effect. Agriculture in much of the study area is influenced by the Canadian Shield, a geological formation characterized by thin soil with rocky outcroppings. Townships in the south tend to have a higher percentage of their total farmland in crop production, and typically have a higher concentration of livestock type farms than their counterparts to the north. Dairy, hog and poultry in particular, appear to be more concentrated in the southern townships. Townships in the south also tend to report higher than average gross farm receipts (per farm & per farmland acre basis). Where there is a notable difference in total farm gate receipts between adjacent townships, the variance is often accounted for by the presence of a large number of dairy farms and/or other intensive livestock enterprises such as hog or poultry production.

In 1996, farm land made up 30% of the total land area in the study area and accounted for approximately 30% of the total farm land in the Eastern Ontario region. In 1996, the study area had 5.5% of the cultivated land area in Ontario and produced 2.4% of the value of Ontario's farm gate sales in 1995. In contrast, the combined counties of Prescott, Russell, Stormont, Dundas and Glengarry accounted for 5.5% of the cultivated land area in the province and produced 4.6% of Ontario's total farm gate sales. The differences between the two regions are a reflection of the greater land quality challenges that exist in the study area which impact the type and intensity of agricultural production. The higher concentration of dairy farms in PRSD&G appears to be a major factor contributing to the difference in total farm gate sales between the two regions.

The data on farm size suggest that the farms are on average larger in the study area than in the Eastern Ontario region as a whole as well as in Ontario. However, there is considerable variation in farm size across the study area. Farms located in the northern parts of the study area are typically larger than farms in the south. Grenville County is distinct in that the average farm size is actually smaller than both the Eastern Ontario and provincial average. The smaller average farm size recorded in Grenville reflects the

concentration of specialty farms in the area where they represent close to 25% of all farm types.

Agricultural production in the study area appeared to be more capital intensive in 1996 compared to 1991 as indicated by the increase in average farm size and slight decline in on-farm jobs during this period. Again, Grenville stands apart from the other three counties in that farming became more labour intensive between 1991 and 1996. This may be explained in part by the high number of specialty type farms in the county. As well, the additional labour needs may be linked to the high proportion of fruit farms in Grenville relative to the other three counties. In general, the study area is following the pattern of capital intensification being experienced across Eastern Ontario and the province.

Considering the nature of the study area's soil resource, agricultural production is substantial. Indeed, farm gate sales in the study area amounted to \$183 million in 1996, an increase of almost \$12 million, or 7%, over 1991. Average farm gate receipts in the study area amounted to \$59,000/farm which represents a lower average than either the Eastern Ontario region or the province of Ontario. However, four townships in the study area exceeded the regional average while two others exceeded the provincial average. Townships with higher than average values were primarily located in the southern parts of the study area.

The number of farms in the study area increased by 4% from 2,951 farms in 1991 to 3,069 in 1996. Much of this growth can be attributed to a large increase in specialty type farms in each of the four counties. Production activities associated with the specialty farm sector include nurseries, greenhouses, sheep, horses, deer, apiaries, fur farms, maple syrup production, Christmas tree production etc. The growth of the specialty sector has served to enhance agricultural diversity in the study area. In other impact studies, diversity was often recognized as an important feature of the agricultural base which helped to insulate the local economy from economic downturns experienced by one or two commodity sectors.

The rise in specialty farms has been accompanied by a large reduction in livestock type operations. The most significant decline occurred in the dairy sector where 213 dairy farms were lost between 1986 and 1996. While there is reason to be optimistic about the growth of the specialty sector and the potential agri-related business links that might

emerge, it is important to recognize that in many townships, the incidence of higher than average net farm income values, continues to be closely linked to the high number of dairy farms and/or other livestock enterprises in the area. Thus, the more 'traditional' elements of the agriculture base are continuing to play a significant role in the local economy and the future development of these sectors needs to be examined in any discussion on promoting economic development in the region.

The second component of the study involved a survey of businesses that buy from and sell to agriculture. The purpose of the survey was to estimate the value of sales related to agriculture and the number of jobs created by agri-related businesses. The list of agri-related businesses was compiled with the assistance of representatives from local Federation of Agriculture affiliates, Municipal Offices, Chambers of Commerce, Economic Development Offices, and the phone directory. The original list of businesses was pared down by eliminating businesses that were either out of business, double listed, located outside of the study area or likely had no connection to agriculture. In order to obtain a 95% confidence level, a random sample of 241 businesses was drawn from the revised list. In total, 275 businesses were surveyed in the spring of 2000; all 275 businesses in the survey provided data regarding employment while 241 provided sales data.

We estimate that there are 664 businesses beyond the farm gate related to agriculture in the study area. The sample survey of 275 businesses, produced an estimate of 1,935 jobs that are tied indirectly to the agriculture sector through expenditures by agri-related businesses. From other secondary sources, we estimate an additional 5,321 jobs in education, health and government services are supported by direct and indirect agricultural jobs. When combined with the 4,325 jobs directly supported by agriculture, the total contribution of agriculture amounts to just under 11,600 jobs. Compared to some of the more prominent manufacturing firms in the study area, agriculture is clearly a major force in the local economy. With its direct contribution of 4,325 jobs, agriculture employs six times the workforce supported by Good Year (Napanee) and seven times the workforce supported by Bombardier Transportation (Kingston/Millhaven).²

² Employment figures for Good Year and Bombardier obtained through the Kingston Economic Development Corporation Business Guide, 1998, and County of Lennox and Addington Economic Development Office, 2000.

With respect to sales, we estimate that the \$183.3 million in farm gate sales produced \$351.6 million in agri-related sales across the study area. The largest agri-related industrial sector in the study area, in terms of the number of businesses present, is Retail followed by Wholesale and Construction. The same three sectors represent the top agri-related industries in the combined counties of Prescott, Russell, Stormont, Dundas and Glengarry. Specialty agricultural services such as veterinary sciences and custom farming were also well represented as linked businesses. Other typical businesses included in the study were welding/fabrication shops, feed and farm supply stores, truck sales and service, general contractors, accounting firms, financial services, legal services, and insurance brokers. The average number of employees working on activities related to serving the agriculture sector for the businesses surveyed was three. According to employment criteria, the great majority of these businesses are classified as small (fifty employees or less).

Selected data indicate that the study area is very active in exporting agri-related products and services beyond its borders. Sales of agri-related goods and services beyond the borders of the study area approached 24% of total sales for the businesses surveyed. In contrast, agri-related export sales for PRSD&G accounted for 8.5% of total sales. Businesses in the study area reported export activity across a number of industrial sectors including manufacturing, wholesale, business services, construction, transportation/storage and agriculture and related services. For most of these sectors, the primary destination for exports is to other parts of Ontario. However, several manufacturing and wholesale agri-related businesses carry on a substantial amount of export trade with the United States. International export activity is partly facilitated by the study areas' close proximity to the United States but is also likely being advanced by the low value of the Canadian dollar.

Value-added agricultural production is a key export component and there are significant opportunities for expanding this activity in the study area. The growth of value-added activity has important implications for sales and employment multipliers in the local economy as each additional level of processing activity procures wealth that would otherwise leave the region. New markets are appearing in relation to shifting consumer demands for a broader range of products that address specific consumer interests including convenience and environmental concerns. These changes will require producers and processors to become more active in areas of market research, seeking out professional services to assist in identifying potential markets and new consumer

needs. Producers and processors will have to become more resourceful in finding services in the private and public sector that can aid in developing their business plans. This may mean approaching organizations such as local business development agencies that have broader mandates than working exclusively with the agriculture sector. For business and economic development officials, greater emphasis should be placed on coordinating efforts between primary production and manufacturing in exploring opportunities for processing more locally grown commodities for final consumption.

The study highlights the extensive linkages that agriculture has with other sectors of the economy and its capacity to produce local economic benefits that extend well beyond the farm gate. Planners and policymakers need to view agriculture in context of the overall benefits and opportunities it provides. In an area where the availability of prime soil resources is limited relative to other regions of the province, policymakers and planners have a key role to play in balancing urban and rural non-farm development with the needs of agriculture to ensure that the local economy continues to benefit from the direct and indirect effects of agriculture. The future of the agriculture sector in Frontenac, Lennox & Addington, and the United Counties of Leeds and Grenville, lies in continued development of the agriculture and agri-related industries.

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Agriculture is a valuable resource to our area.

Sincerely,
Agriculture Impact Study Committee for Lennox & Addington, Frontenac,
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Dudley Shannon - Chairperson

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1.0 Introduction

This report attempts to measure the economic impact of agriculture on the Counties of Frontenac, Lennox and Addington, Leeds and Grenville. While providing an analysis of primary agriculture in the county, it focuses on agriculture beyond the farm gate - the livestock feed processors, the veterinarians, the trucking companies and others who deal with the agriculture industry. In the past, many studies of this type have restricted themselves to reports of conditions on the farm. By ignoring the size and importance of agriculture beyond the farm gate, the impact of agriculture was under-emphasized. This study hopes to set the record straight and present a more complete picture of the agricultural economy.

The basic focus of the study is on dollars and jobs. The methodology relies mainly on 'input-output' analysis as a tool for assessing the impact of agriculture. This approach depicts the economy as a series of sectors that buy and sell goods to each other until they reach the point of consumption. The purchases of products by sectors from other sectors are the inputs, and the sales to other sectors by a sector are the outputs.

The research presented in the report relies on data from the Population Census, Agricultural Census, surveys of Agricultural-related businesses located in the study area and information from local citizens knowledgeable of the area. The report includes a discussion of the role of agriculture in the study area economy, as well as a discussion of related socio-economic conditions.

1.1 Background to the Research Report

Rural Ontario has experienced enormous change in the last fifty years. From a demographic perspective, the composition of the rural population has become predominantly non-farm based. By 1981, the farm-based population in rural Ontario accounted for only eighteen percent of the total rural population compared to fifty-five percent in 1931 (Dasgupta, 1988, pp.26-30). The rural economy has also undergone considerable structural change as a consequence of global economic restructuring. Restructuring of the economy came about as other regions of the world developed competitive manufacturing sectors that challenged many of the manufacturing industries that were the heart of Canada's industrial economy (steel, automobiles, farm machinery, consumer electronics, etc.). In an effort to become more competitive, Canadian firms responded by reducing the size of their domestic workforce, adopting more automation and shifting production operations offshore.

At the same time the manufacturing sector was adjusting to global restructuring, agriculture experienced problems of reorganization and restructuring in response to overproduction, a declining market for unprocessed agricultural goods, and new competition in the world market (Goe and Kenney, 1991, p140-141).

Although rural economies continue to have a strong resource base, the percentage of jobs directly employed in agriculture production has been declining in Canada since the turn of the century (Keddie, 1999, pp.11-18). The job movement out of agriculture and other resource sectors has been accompanied by growth in service sector employment. In rural Ontario, the service sector now exceeds the goods producing sector as the principal employer (Bollman and Biggs, 1992, pp.21-28; Keddie, 1999, pp.30-31).

These changes have led some analysts to question the importance of agriculture as an engine of economic growth (Whyte, 1978, p.43). Indeed, analysts and policymakers are increasingly looking to other economic activities such as tourism to spur economic growth in rural areas.

It is important to note that, even though there were declines in the number of direct jobs in agriculture (ie. on-farm jobs), the value of farm gate sales has continued to rise. Between 1986 and 1996, farm gate sales in Ontario rose from \$5,511 million to \$7,778 million (a growth rate of 3.5% per year) while employment on farms declined. Not only did the value of production increase, the volume of production also increased. This implies an increase in the productivity of farm workers and more capital intensive farm operations. With fewer people working on farms, the linkages to industries and sectors supporting agriculture become all the more important.

1.2 Introduction to the Frontenac, Lennox and Addington, Leeds and Grenville Research

In recent years, a number of research initiatives have been undertaken in different regions of Ontario to assess the total impact of agriculture on the local economy. The research findings indicate that agriculture has extensive industry linkages and is responsible for generating a significant number of jobs in the local economy beyond the primary production stage.

The research conducted in Huron County, Simcoe County and the combined counties of Prescott, Russell, Stormont, Dundas and Glengarry gained the attention of local Federation of Agriculture affiliates in Frontenac, Lennox and Addington, and Leeds and Grenville. These Federations of Agriculture recognized that conventional economic indicators associated with agriculture were inadequate in showing the total impact agriculture has on the economy as a whole.

A working group was formed to address the issue with representatives from local

Federation of Agriculture affiliates in Frontenac, Lennox and Addington, Leeds and Grenville; Human Resources Development Canada; 1000 Island Community Development Corporation, South Leeds Economic Development Commission; Corporation of the County of Lennox and Addington; Lennox & Addington, Frontenac, Leeds and Grenville Training Board, and the Ontario Ministry of Agriculture, Food and Rural Affairs. Dr. Harry Cummings, a consultant and professor at the University of Guelph School of Rural Planning and Development, was approached to carry out the work using a similar methodology to the Huron, Simcoe, and Prescott, Russell, Stormont, Dundas and Glengarry studies.

2.0 Spatial and Temporal Aspects of Agriculture in Eastern Ontario

2.1 Introduction

This component of the study provides insights into the variable nature of agriculture across the study area by mapping various attributes at the township or census subdivision scale. This in turn reveals the enormous diversity exhibited by agriculture across the study area.

The study area (Figure 1a) consists of four counties in Eastern Ontario: Frontenac County, situated in the central part of the study area and running north-south with the southern portion abutting the St. Lawrence River; Lennox and Addington County, also running north-south and located in the western part of study area with its southern boundary abutting the eastern end of Lake Ontario; and the United Counties of Leeds and Grenville, situated along the St. Lawrence River and in the eastern part of the study area. These four counties are, in turn, part of the Eastern Ontario Region as defined by Statistics Canada in the Census of Agriculture, Ontario. The study area is bordered by Hastings County to the west and Renfrew County to the north. In the east, the study area is bordered by Lanark County, Stormont, Dundas and Glengarry County, and the regional municipality of Ottawa-Carleton.

Census sub-division boundaries in the study area have changed in recent years through the process of amalgamation. In some instances, the names of townships have been changed to reflect the new boundaries. A review of recent amalgamations (1986-1996) is provided in Appendix A.

Table 1 provides a broad perspective on various agriculture attributes of the study area in comparison to the Eastern Ontario Region and the province. From these data one can fairly conclude that the study area is, in agricultural terms, not one of the more productive parts of Ontario's agricultural landscape. However, this statement is reflective of 'average' values across the study area. It is important to recognize that a large portion of the study areas' land base, particularly the northern townships of Frontenac and Lennox and Addington, is part of the Canadian Shield, a geological formation characterized by

very thin soil with rocky outcroppings.³ Despite the presence of this geological feature, the amount of agriculture production in the study area is substantial. Indeed, there are regions within the study area where the agriculture sector matches or surpasses regional and provincial averages.

The Census of Agriculture, Ontario published every five years by Statistics Canada, provides data on agriculture at the scale of census subdivisions which are in turn the townships of the study area. In 1996 the study area consisted of 41 census subdivisions (CSDs) or townships (Figure 1b):

- Leeds and Grenville United Counties: 16
- Frontenac County: 15
- Lennox and Addington: 10

Because data for some of these census subdivisions are amalgamated with others in 1996 and 1981 and because these amalgamations are in part different between the two dates the number of townships (or township grouping) or census subdivisions (or census subdivision grouping) used in this study, and presented on the figures are reduced to 35. The 16 census subdivisions of Leeds and Grenville remain intact. The number of census subdivisions in Frontenac is reduced from 15 to 10:

- Wolfe Island and Howe Island form one amalgamated unit.
- Oso, Kennebec, Barrie, Clarendon and Miller, Palmerston and North and South Canonto (5 CSDs) form one amalgamated unit.

The number of census subdivisions in Lennox-Addington is reduced from 10 to 9:

- Kaladar, Anglesea and Effingham is amalgamated with Denbigh, Abinger and Ashby.

With the exception of data on soils all the data presented in this study has been taken from data collected by Statistics Canada. Most of the data were extracted from the 1996 census but change maps were produced by also using 1981 census data.

Data on selected attributes of agriculture across the census subdivisions of the study are presented as a series of figures (maps). Each figure is in turn accompanied by a brief description of the spatial pattern associated with the attribute presented on the map.

³ The Canadian Shield arches across Ontario in a roughly east west direction, separating basins containing younger sedimentary rocks. The line through Ontario runs along the northern shores of Lake Superior and Lake Huron, along the margin of Georgian Bay to Coldwater (just north of Orillia), then east in a jagged line to eventually hit the Ontario - New York border at Gananoque, where it extends east along the St Lawrence River to Brockville. The Shield extends south into the United States as the Adirondack Mountains. At Brockville, the Shield heads west through Athens to Newboro and then north through Perth and Carleton Place, and roughly west to Annprior, where it swings into Quebec. (Geological Survey of Canada, May 2000. <http://agcwww.bio.ns.ca/>)

Figure 1a. Location of Study Area in southern Ontario

Figure 1b. Key Map of Study Area: Census subdivision code and township names

Table 1. The study area in provincial perspective, 1996.

Selected Attributes	Ontario	Eastern Ontario Region	Study Area
Number of farms	67,520	10,473	3,069
Average farm size (acres)	206	239	250
Average area under crops per farm (acres)	130	117	99
Crop land as a percent of farm land	63.1	49.1	39.4
Gross farm receipts per farm (\$ '000)	115	76	60
Gross farm receipts per acre of farm land (dollars)	560	320	239
Percent of farms with gross receipts less than \$2,500	11.3	16.6	19.9
Percent of farms with gross receipts less than \$10,000	30.1	43.6	51.4
Percent of farms with gross receipts greater than \$100,000	29.0	22.6	15.1
Net farm income per farm (dollars)	18,261	14,277	8,628
Total expenses as a percent of total gross farm receipts	84.1	81.3	85.6

Note: Net farm income is derived by subtracting total expenses from gross farm receipts and dividing by the number of farms.

2.2 The Farm Land Resource Base

2.2.1 Census Farm Land as a Percent of Total Area

In 1996, census farm land (768,527 acres) constituted about 31% of the study area. At the township (CSD) scale farm land ranged from 2.8% to 77.8% of the total area. As indicated on Figure 2, low values (<5%) are a feature of the northern portions of Frontenac and Lennox-Addington below which one finds a group of 4 townships in the 15-30% category. These low values correspond with the presence of geological features associated with the Canadian Shield which limits certain types of agricultural production. Across the remainder of the study area all townships record values above the mean with 14 in the 40-60% range and 4 with values above 60%.

2.2.2 Percent of Total Area in Canada Land Inventory (CLI) Class One, Two and Three Soils

The nature of the study area's soil resource is one of the factors which accounts for the fact that farm land constitutes only 31% of the study area. Table 2 provides data on the soils of the study area and reveals that nearly 48% of the total area has soils unsuitable for agriculture while only 21% of the study area has soils in the top three capability classes. Figure 3 shows for each township (or township grouping) the proportion of total area with soils of classes one, two and three. The study area mean is only 21.0% and the range is enormous (0.1 to 86.2%). Low values (0.1-5%) encompass the northern half of Lennox-Addington and about two-thirds of Frontenac. Across the remaining townships values are quite variable and 9 townships record values in excess of 50%.⁴

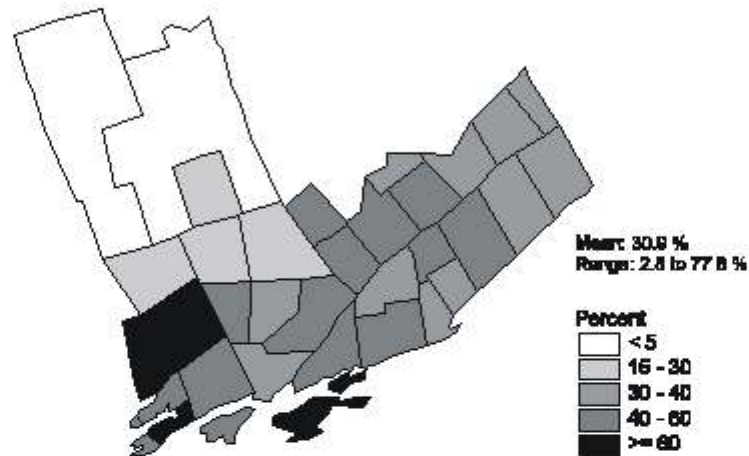
Table 2. Study Area: Proportional distribution of soils by CLI capability classes for agriculture.

<i>Class</i>	<i>Percent</i>	<i>Comments</i>
Class 1	4.5	} Suitable for sustained production of common field crops if specified management practices are followed.
Class 2	6.8	
Class 3	9.7	
Class 4	4.3	Physically marginal for sustained arable use
Class 5	4.8	Capable use only for permanent pasture & hay
Class 6	15.6	Capable of use only for grazing
Class 7	47.7	Unsuitable for agriculture
Class 0	6.0	Organic soils (not placed in capability classes)
Unclassified	0.6	

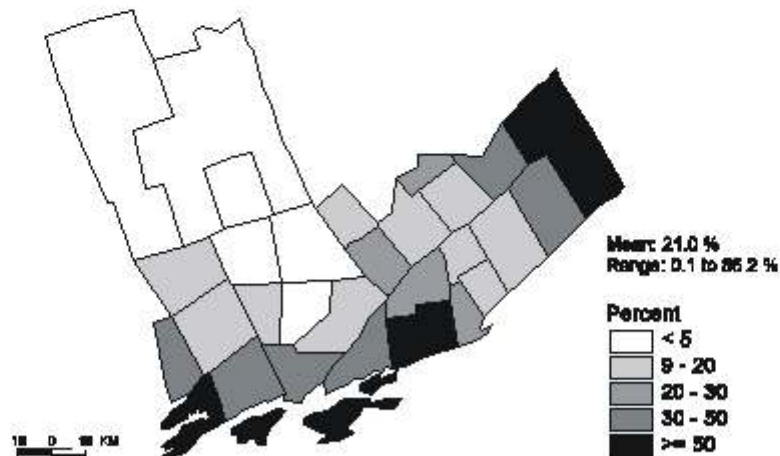
⁴ Relying solely on Canada Land Inventory classification as an indicator of soil productivity, can be misleading. Tobacco production is typically grown on sandy soil which is classified as unsuitable for agriculture (Class 7) but generates substantial revenue on a per acre basis. Furthermore, the productivity associated with some 'intensive' type farm operations such as hog farms and poultry farms can be quite substantial, despite being located in an area where the soil producing capability is limited relative to neighbouring areas. This appears to be the case in the township of Elizabethtown where less than 70% of the land base is classified as one, two or three land (Figure 3). However, gross receipts/acre of farm land were substantially higher in Elizabethtown than those recorded in neighbouring townships. See Section 2.7 and Section 3.4.6 for further details.

Source: Calculated from data reported in D.W. Hoffman and H.F. Noble, Acreages of Soil Capability Classes for Agriculture in Ontario (Rural Development Branch, Ontario Ministry of Agriculture and the Department of Regional Economic Expansion, Canada) October, 1975.

**Figure 2. Census farmland as a percent of total area
by census subdivision, 1996**



**Figure 3. Percent of total area in CLI classes one, two
and three soils by census subdivision**



2.3 Change in the Farm Land Resource

2.3.1 Change in Total Farm Land

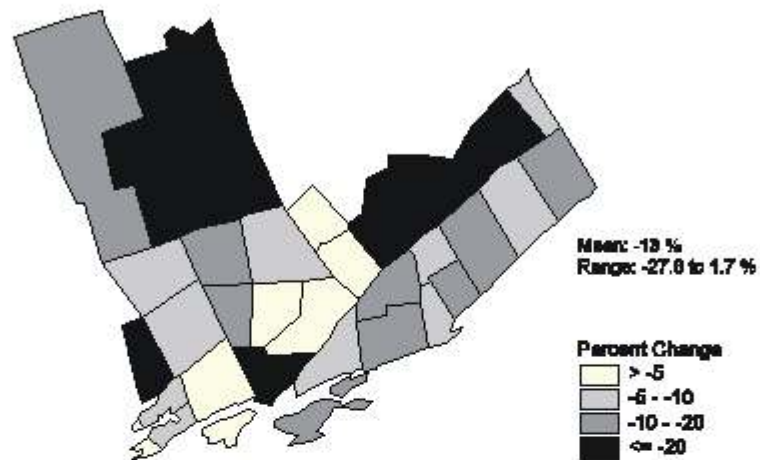
In 1981 the study area contained 883,954 acres of farm land while by 1996 this value stood at 768,527 acres, a decline of 115,427 acres or 13%. At the township or CSD level, values range from -27% to +0.9 percent but only one township (North Crosby) registered a gain. The pattern on Figure 4 defies description as it appears to be quite random. Considerably higher than average declines are a feature of northern Frontenac and a strip of townships across Leeds-Grenville bordering Lanark County.

Between 1991 and 1996, the area of total farmland increased from 745,876 acres to 768,527 acres, a 3% increase. Part of this increase can be explained by the inclusion of Christmas tree farms as part of the inventory of farms. In 1996, 73 farms in the study area reported growing Christmas trees on a total land base of 1,510 acres (Statistics Canada, 1996). Additional details are provided in Section 3.4.2.

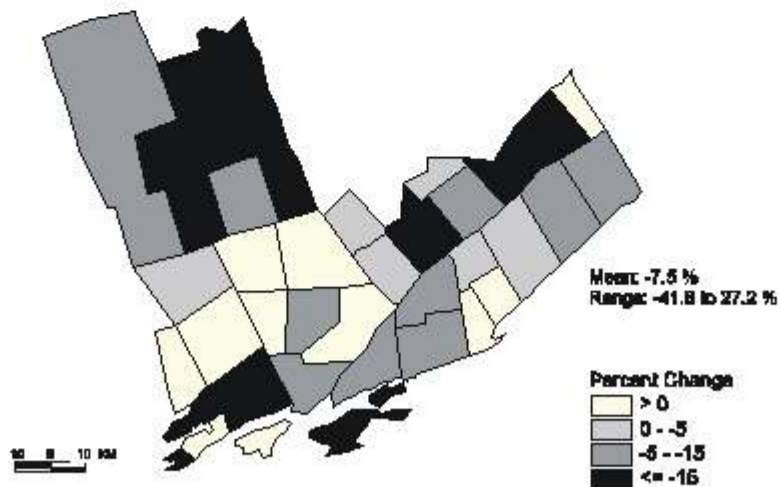
2.3.2 Change in the Area of Crop Land

While farm land declined by 13% across the period 1981-1996 the area of cropland declined by only 7.5%, suggestive of some selectivity in the process of farm land loss. The 7.5% decline in crop land represents a loss of 24,698 acres (327,468 to 302,770). While the mean for the study area was -7.5% the range was from -41.8% to +27.2%. The patterns of change (Figure 5) again defy easy description. In total 11 CSDs registered gains in crop land and a relatively contiguous block of gains can be found across central Lennox-Addington and Frontenac. Losses greater than 15% are a feature of northern Frontenac, 3 townships in northern Leeds-Grenville, Wolfe/Howe Island in Frontenac and Ernestown, North Fredericksburg and Adolphustown in Lennox-Addington.

**Figure 4. Percent change in area of total farmland
by census subdivision, 1981 - 1996**



**Figure 5. Percent change in area of cropland
by census subdivision, 1981 - 1996**



2.4 Farm Size

2.4.1 Change in Average Farm Size

The average farm size recorded a gain from 239 acres in 1981 to 250 acres in 1996. Figure 6 shows the percent change in average farm size from 1981 to 1996 for the townships of the study area. The pattern is relatively random. Across northern Frontenac and Lennox-Addington and for two townships in Leeds-Grenville farms were on average more than 5% smaller in 1996 than in 1981, while an additional seven reported average farm sizes marginally smaller in 1996 than 1981. At the other extreme 10 CSDs reported averages in 1996 more than 15% larger than in 1981.

2.4.2 Average Farm Size in Acres

Across the study area the average size of farms in 1996 was 250 acres. Data for the study area on farms classified by size categories reveals, however, that:

- nearly 22% of farms were less than 70 acres in size
- over 50% (1,598 of 3,069) were under 180 acres in size
- nearly 20% were over 400 acres or larger in size

Farm size also varies markedly at the township scale, where average farm sizes range from 119 (South Gower) to 412 acres (Bedford). As revealed in Figure 7 farms averaging over 300 acres are a feature of the more northerly townships although both Adolphustown and Amherst Island also record average farm sizes in excess of 300 acres. Most townships record farm sizes only slightly below (200-250) acres) or above average (250-300 acres). Five townships recorded average farm sizes below 200 acres.

Figure 6. Percent change in average farm size, 1981 - 1996

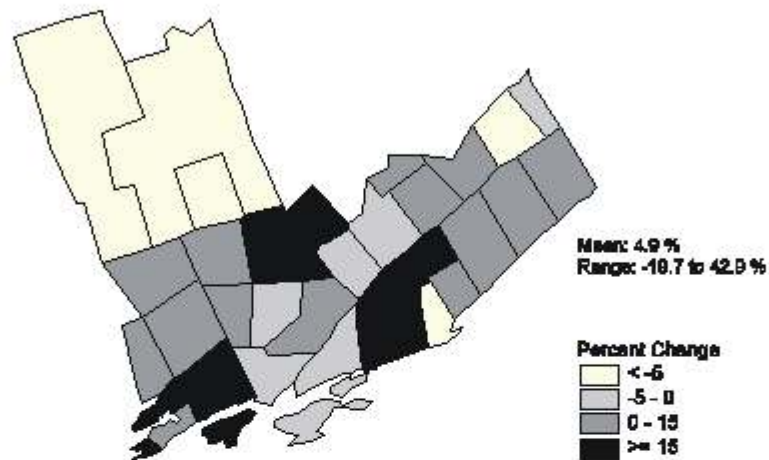
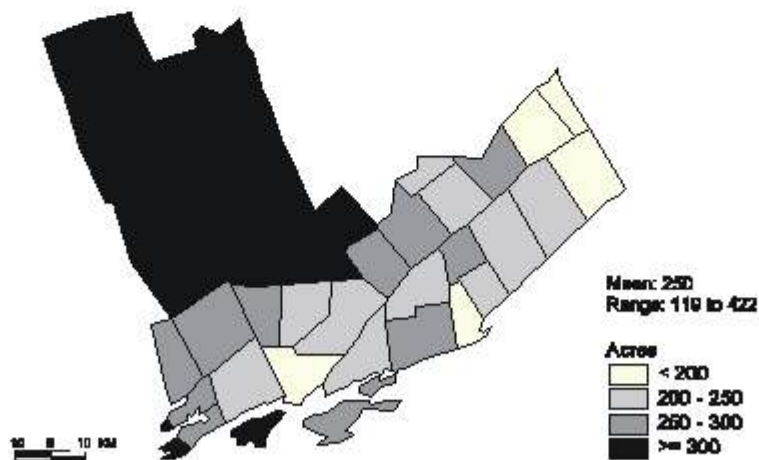


Figure 7. Average farm size in acres, 1996



2.5 Crop Land and its Change

2.5.1 Crop Land as a Percent of Total Farm Land

In 1996 (Figure 9) crop land as a percent of farm land averaged 39.4%. A similar finding of 37.1% was recorded for 1981 (Figure 8). Average farm land acres by CSD ranged from 8.9% to 67.2%. This range probably reflects the variable characteristics of the soil resource base for agriculture. Low values (less than 25%) are a feature of the northern portions of Frontenac and Lennox. Addington which also report low values in terms of farm land as a percent of total area (Figure 2) and percent of total area in soils in classes one, two and three (Figure 3). These broad constraints are in turn reflected by low values in crop land as a percent of total farm land. Most CSDs (19 of 35), with crop land as a percent of farm land in the 35 to 50% category, form a contiguous band across the study area. Six CSDs display values in excess of 50%. These six are among the nine CSDs where over 50% of the township area has soils in classes one, two and three (Figure 3).

2.5.2 Change in Area of Crop Land per Farm

While the acres of crop land in the study area declined by 7.5% between 1981 and 1996 (Figure 5) the area of crop land per farm increased by 11.6% across the same period (Figure 10). A total of 6 CSDs had on average smaller areas of crop land per farm in 1996 than in 1981. However, 15 CSDs recorded gains in crop land per farm in excess of 15%. In a situation where total farm land has declined more than crop land and farm numbers have declined more than either the expectation would be that increases in crop land per farm would be the norm.

2.5.3 Average Acres of Crop Land per Farm

Across the study area crop land per farm averaged 99 acres in 1996 with a range from 33 to 205 acres. As indicated on Figure 11 the lowest values (33-75 acres) are a feature of the northern portions of Frontenac and Lennox-Addington and a few townships in Leeds-Grenville. Adolphustown (205 acres) recorded the highest value.

Figure 8. Cropland as a percent of total farmland, 1981

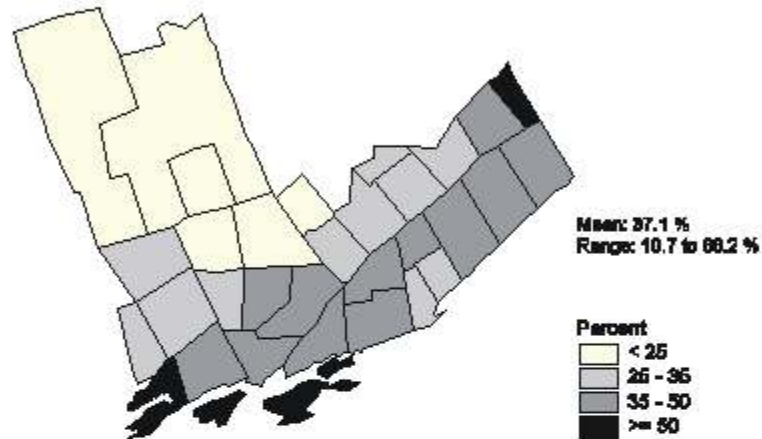
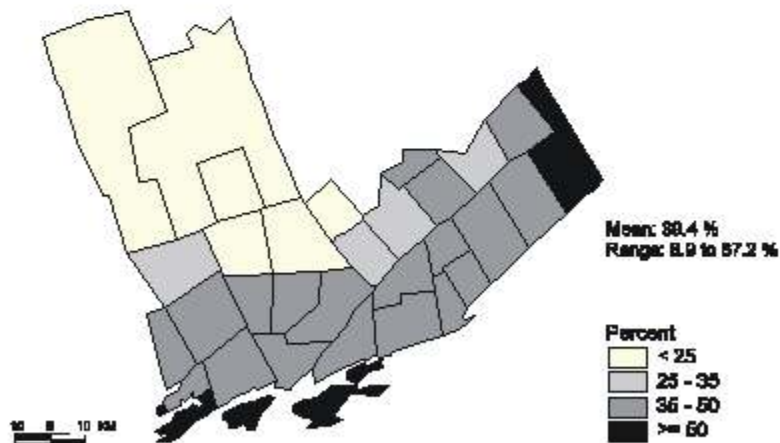


Figure 9. Cropland as a percent of total farmland, 1996



**Figure 10. Percent change in area of cropland per farm
1981 - 1996**

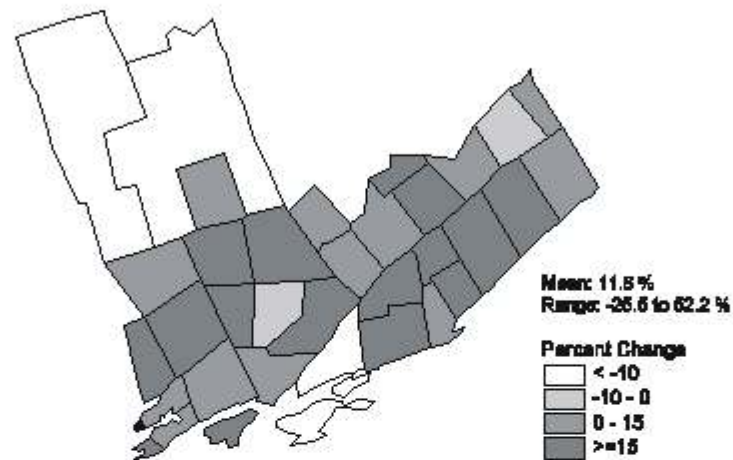
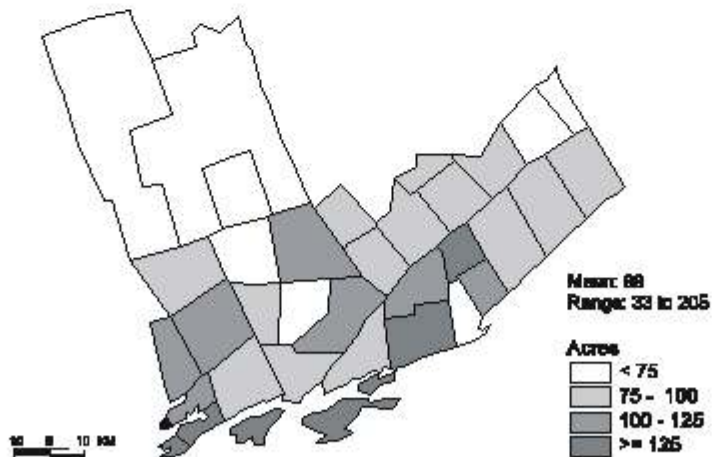


Figure 11. Average acres of cropland per farm, 1996



2.6 Farm Types

Table 3 shows the proportional distribution of farms classified by type for the census years 1981, 1986, 1991 and 1996. As is evident from these data, livestock enterprises dominate although livestock types of enterprises have declined from about 84% of the total in 1981 to only 64% in 1996. Despite this decline cattle and dairy enterprises, at about 37% and 22% respectively, were still the most common enterprise type in 1996. 'Other field crop' enterprises (probably based largely on hay)⁵ increased from 1.5% of enterprises in 1981 to 12.5% in 1996 while miscellaneous specialty enterprises increased from 4.8% to 15.9% of the total.

Since farms classified by type includes only farms with sales of \$2,500 and over, some portion of the study areas census farms are excluded from this classification. For example, in 1996 only 2459 of the study area's 3069 farms were classified as 610 farms (nearly 20%) reported sales below the \$2,500 threshold.

Figure 12 shows for 1996 the proportion of farms in each township classified as cattle enterprises. While they averaged about 37% for the study area as a whole the range is from 16.1 to 64.9% for the townships. While this range is substantial cattle enterprises are distributed relatively uniformly across the study area with only 5 CSDs recording values below 26% and only 4 recording values of 50% or greater.

Dairy farms constitute the second leading type of enterprise and accounted for 22.4% of the total in 1996, down substantially from 36.0% in 1981. At the township scale dairy farms ranged from 0.0% to 41.2% of the total. As is evident on Figure 13 low values are a feature of the northern portions of Frontenac and Lennox-Addington and the two north-eastern townships of Leeds-Grenville. One finds most of the values higher than average in a relatively contiguous block in south-eastern Frontenac and the western portions of Leeds-Grenville although the highest value (41.2%) occurs in South Fredericksburg in south-western Lennox-Addington. There is a tendency for townships with a high incidence of dairy farms to also be those with above average net farm incomes (see Figure 21).

Other types of enterprises constituted about 40% of the total in 1996 compared to only 23% in 1981. These however, are spread across a diversity of types. Miscellaneous specialty farms, at 15.9%, constituted the third leading enterprise type in 1996 and as

⁵ Next to Western Ontario, Eastern Ontario is the leading hay producing region in the province accounting for 23% of the total production in Ontario. Hay is an important field crop for the study area, accounting for 27% of the total production in Eastern Ontario and 6.2% of the total provincial production. In 1995, hay acreage in the study area amounted to 188,000 acres (Frontenac, 55,000 acres; Leeds, 55,000 acres; Lennox and Addington, 48,000 acres; Grenville, 30,000 acres). Total hay production in the study area in 1995 amounted to 423,000 tonnes, worth a total value of \$29.4 million. (Agricultural Statistics for Ontario, 1995. Publication 20, Ontario Ministry of Agriculture, Food and Rural Affairs).

noted earlier increased from 4.8% in 1981. As the name indicates a range of different enterprise types fall into the miscellaneous specialty type (e.g. sheep, horses, goats, greenhouses, nurseries, mushroom houses, apiaries, fur farms). At the CSD scale across the study area the percent of farms classified as miscellaneous specialty ranged from 5.3% (Sheffield) to 33.9% (South Gower). As indicated on Figure 14 high values ($\geq 20\%$) are a feature of the northern portion of Lennox-Addington and Frontenac, the Kingston area in Frontenac and north-eastern Leeds-Grenville. Most townships (19 of 35) report values in the 10-15 or 15-20% range. In the vicinity of Kingston the high incidence of miscellaneous specialty farms may reflect opportunities afforded by urban proximity for riding stables and nursery and greenhouse enterprises. In the northern parts of Frontenac and Lennox-Addington (where farm numbers are low in any case) Christmas tree farms could play a role in the high incidence of miscellaneous specialty enterprises. Appendix R provides additional details on several specialty farm types in the study area.

Other field crop farms at 12.5% constitute the fourth leading enterprise type and the final type constituting more than 10% of the total (see Table 3). Across the study area their incidence ranged from 4% (Olden) to 28.3% (Hinchinbrooke), two contiguous townships in Frontenac. As indicated on Figure 15 the pattern appears to be relatively random. However, 8 of 9 CSDs with values less than 10% are among the 15 CSDs of Leeds-Grenville. Higher values (15%+) are more frequently found in Frontenac and Lennox-Addington. Given the nature of land use in the study area it is reasonable to conclude that the vast majority of other field crop farms are enterprises where 51% or more of potential sales came from the sale of hay.

Table 3. Study Area: Proportional distribution of farms with sales of \$2,500 or more by farm type, 1981 to 1996.

Farm Type	% 1981	% 1986	% 1991	% 1996
Dairy	36.0	31.8	27.5	22.4
Cattle	40.8	44.6	42.8	37.3
Hog	2.4	1.8	1.4	0.8
Poultry & Egg	2.1	1.1	0.9	1.0
<u>Livestock Combination</u>	<u>3.0</u>	<u>1.2</u>	<u>2.3</u>	<u>2.6</u>
All Livestock Types	84.3	80.5	74.9	64.0
Grain and Oil Seed	6.1	5.9	2.7	3.2
Other Field Crops	1.5	0.6	4.7	12.5
Fruit	1.9	1.1	0.9	1.1
Vegetable		1.2	1.5	0.9
Miscellaneous Spec.	4.8	6.9	14.0	15.9
Other Combinations	1.3	3.8	1.3	2.4
Total	100.0	100.0	100.0	100.0

Source: Statistics Canada

A comparison between the study area farm type profile and the Eastern Ontario profile and province of Ontario profile is provided in Section 3.4.5.

Figure 12. Percent of census farms with sales of \$2,500 or more in 1995 classified as cattle farms, 1996

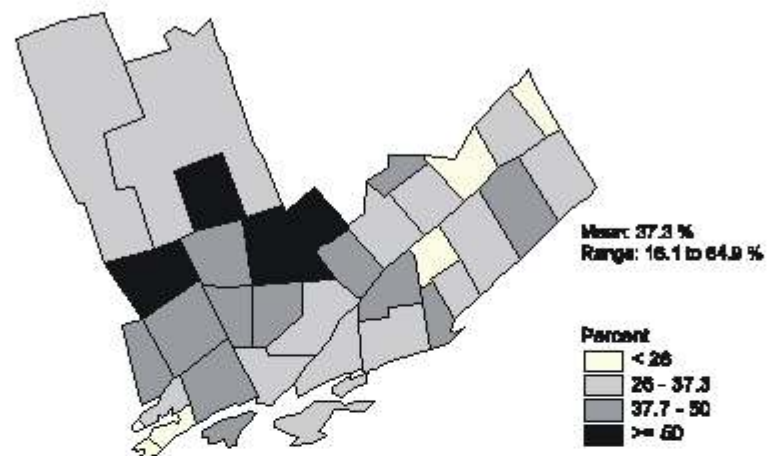


Figure 13. Percent of census farms with sales of \$2,500 or more in 1995 classified as dairy farms, 1996

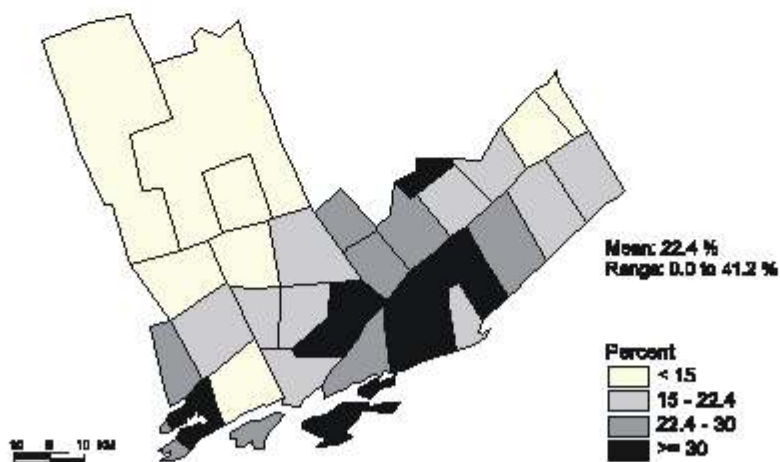


Figure 14. Percent of census farms with sales of \$2,500 or more in 1995 classified as miscellaneous specialty farms, 1996

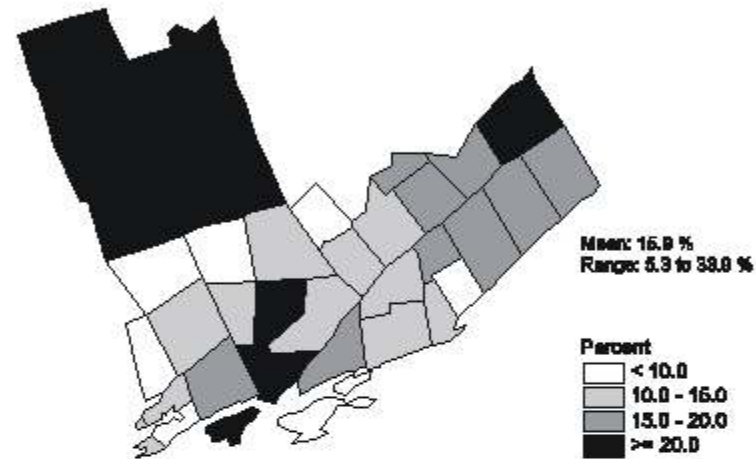
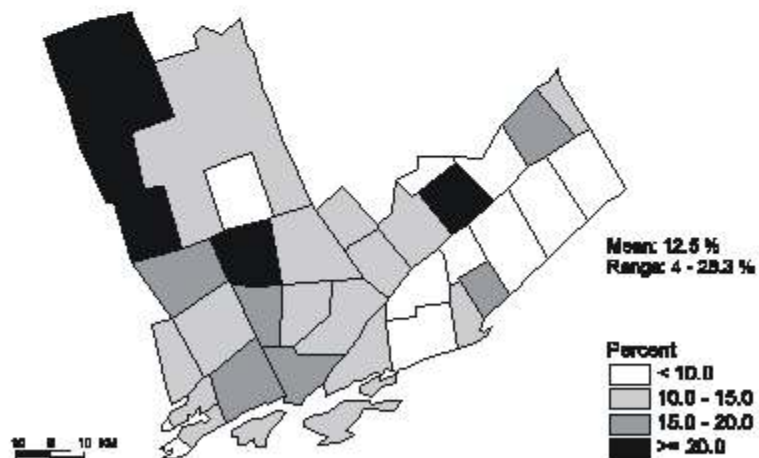


Figure 15. Percent of census farms with sales of \$2,500 or more in 1995 classified as other field crop farms, 1996



2.7 Aspects of Gross Farm Receipts

2.7.1 Change in Gross Farm Receipts by Census Subdivision

For the study area gross farm receipts increased by 75% across the period 1980 to 1995. This compares to an increase of 66% for Ontario as a whole. At the census subdivision scale however this increase ranged from a low of 20.0% to a high of 274.7%, by any measure a remarkable range. Figure 16 demonstrates that the pattern of increase appears quite random with neighbouring townships exhibiting quite different levels of percentage change. For example Elizabethtown recorded an increase of 170.0% while neighbouring Augusta recorded an increase of only 27.0%. This raises interesting questions regarding variations in the levels of investment made in the industry in the years from 1980 to 1995.

2.7.2 Census Subdivision Shares of Study Area Gross Farm Receipts

In 1995 the study area recorded gross farm receipts of over 183 million dollars. At the census subdivision scale the share of this total ranged from a low of 0.2% (Olden) to a high of 16.6% (Elizabethtown). It is worth noting that while Elizabethtown generated 16.6% of gross receipts it accounted for only 4.6% of study area farm land and 5.1% of study area crop land in 1996. Since gross receipts are one measure of the size of the agriculture industry Figure 17 provides a sense of the relative size of the industry across the study area. Twelve CSDs (out of 35) in the study area recorded shares of 3% or greater of gross farm receipts (Figure 17). These twelve townships accounted for 66% of the total gross farm receipts in 1996.

2.7.3 Gross Farm Receipts per Farm

Gross farm receipts are one measure of the size of the farm enterprise, but not necessarily of its profitability. In 1995 gross farm receipts averaged about \$60,000 for the study area compared to a provincial average of \$115,000. Data for the study area on farms classified by gross farm receipt categories revealed, however, that:

- nearly 20% reported receipts under \$2,500
- over 50% (1,577 of 3,069 farms) reported receipts under \$10,000
- about 15% reported receipts of over \$100,000
- 28 farms reported receipts in excess of \$500,000

Consequently the average of \$60,000 is a statistic of limited utility in understanding this attribute of farming for the entire study area.

As revealed in Figure 18 gross farm receipts per farm are also highly variable across the townships of the study area, ranging from a low of \$12,000 to a high of \$266,000. Well below average receipts are generally a feature of much of Frontenac and the northerly portions of Lennox-Addington. Equally striking is the often marked difference in average receipts between adjacent townships.

Two townships (Adolphustown at \$266,000 and Elizabethtown at \$191,000) stand out as distinctive with gross receipts 3 or 4 times as high as those recorded in neighbouring townships. Livestock farms are prevalent in both areas, with some operations such as hogs likely being quite intensive. In Elizabethtown we find three hog operations which account for 50% of all hog farms in Leeds County while the single hog operation in Adolphustown represents a quarter of all hog farms in Lennox and Addington County. A further factor influencing the magnitude of average gross sales recorded in Adolphustown is the small number of farms in the area. As such, the average is subject to a few farms with high gross sales skewing the results.⁶

2.7.4 Gross Farm Receipts Per Acre of Farm land

Receipts per acre of farm land are to some degree a measure both of the quality of the farm land resource (e.g. how much of it is crop land and the quality of the crop land) and the intensity of its use. However, since receipts may also be a reflection of inputs (feed and livestock etc.) purchased elsewhere care is needed in interpreting the data on gross receipts per acre of farm land.

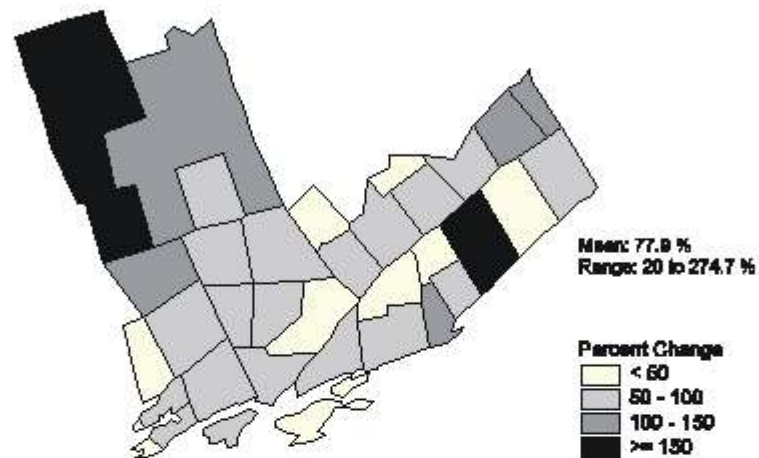
Across the study area gross receipts per acre of farm land averaged \$239 in 1995 compared to a provincial average \$560. For the most part this probably reflects the relatively low quality of the farm land resource for the study area as reflected by the fact that across the study area crop land constitutes only 39.4% farm land compared to a provincial average of 63.1%.

While gross receipts per acre of farm land averaged \$239 at the township scale it ranged from a low of \$33 to a high of \$859. As is evident on Figure 19 low values (<\$90) are a feature of the northern portions of Frontenac and Lennox-Addington, the part of the study area with the poorest soil resource and where crop land as a proportion of farm land is also lowest. The patterns exhibited elsewhere across the study area do not seem to bear any clear cut relationship to the quality of the soil resource or to crop land as a proportion of farm land. One particularly notable feature (in evidence on the map of gross farm receipts per farm) are the extremely high values for Adolphustown (\$721) and Elizabethtown (\$859), both more than 3x the study area average and well above the third highest value of \$436 recorded for Edwardsburgh. Since neither of these townships, particularly Elizabethtown, would seem to have any particular bio-physical advantage, the

⁶ With a total of 20 farms, Adolphustown has considerably fewer farms than Elizabethtown which has 159. Adolphustown is one of the smallest townships in the study area covering an area of 12,479 acres of which 7,370 acres were reported as farmland in 1996. In contrast, Elizabethtown is one of the larger townships in the study area with 82,286 acres of which 12,479 acres were reported as farmland in 1996. Average farm size in Adolphustown is 368 acres and farm types include dairy (5 farms), beef (4), specialty (2), and hogs (1). Average farm size in Elizabethtown is 223 acres and farm types include of beef (41 farms), dairy (37), specialty (22 farms), field crops (11 farms), and hogs (3 farms).

high values are probably a reflection of the presence of intensive farming enterprises based in large part on purchased inputs (feed, livestock, etc.) produced elsewhere.

**Figure 16. Percent change in gross farm receipts
by census subdivision 1980 - 1995**



**Figure 17. Census subdivision shares (%) of study area gross
farm receipts, 1995**

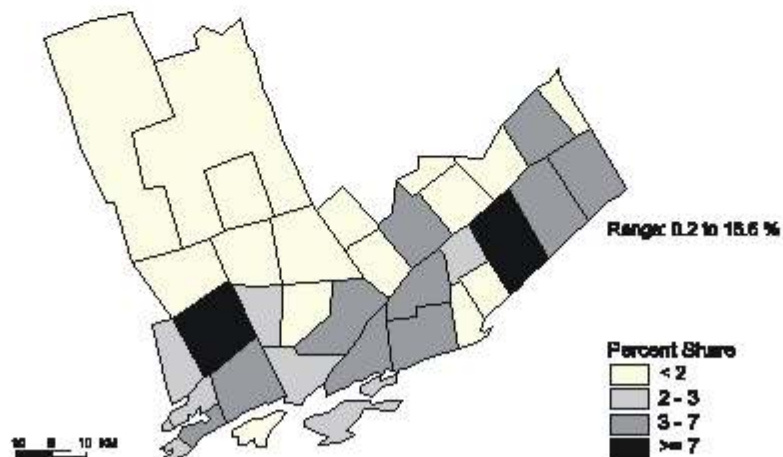


Figure 18. Gross farm receipts (\$ '000) per farm, 1995

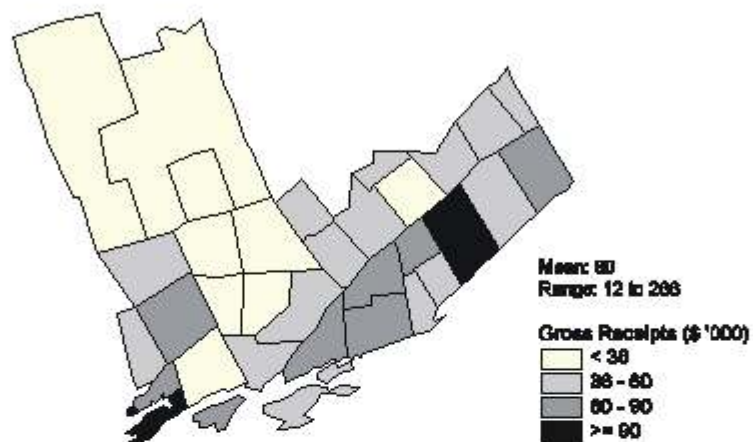
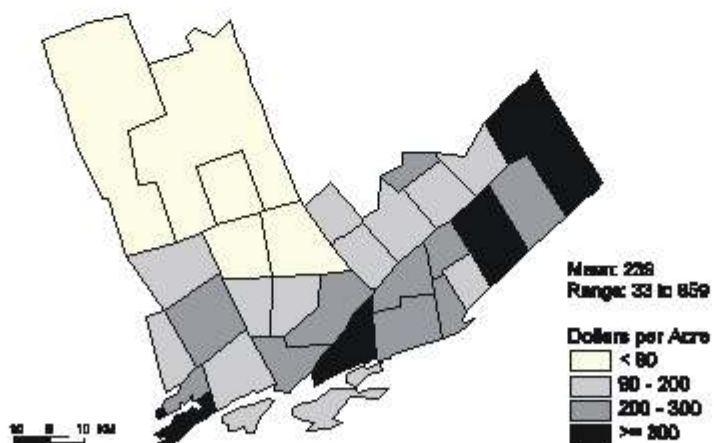


Figure 19. Gross farm receipts per acre of farmland, 1995



2.8 Total Expenses vs Gross Farm Receipts

Total expenses as a percent of gross farm receipts is a measure of the relationship between the cost of inputs (total expenses) and the value of outputs (gross farm receipts). *Ceteris paribus*, expenses at 80% of receipts is more desirable than expenses at 95% of receipts. For the study area as a whole expenses are 85.6% of receipts which is similar to the Ontario value of 84.1%. It should be pointed out that this ratio of expenses to receipts, however, translates into a net income of \$18,261 per farm provincially, but only \$8,628 per farm for the study area.

Across the CSDs of the study area, expenses as a percent of receipts range from a low of 77.2% (Elizabethtown) to a high of 142.7% (Hinchinbrooke). As is evident in Figure 20 four CSDs, all in northern Frontenac, reported expenses in excess of gross farm receipts. At the other extreme five CSDs, four of which are located in Leeds-Grenville, recorded expenses less than 81% of receipts. All five have a stronger than average presence of dairy farming.

2.9 Aspects of Net Farm Income

2.9.1 Net Farm Income per Farm

Net farm income per farm is derived by subtracting total expenses from total gross farm receipts and dividing by the number of farms. This statistic provides a comparative if crude measure of average farm incomes from farming. Across the study area this averaged \$8,628 compared to an Ontario average of \$18,261 and an Eastern Ontario Region average of \$14,277. Although the provincial average is more than twice that of the study area both averages are such that it comes as no surprise that the majority of farm family income in Ontario, and Canada as a whole for that matter, is derived from off-farm employment. Nonetheless this statistic provides a useful comparative measure of income derived from farming.

At the township scale (Figure 21) net income per farm ranges from \$-5,147 to \$43,579. As is evident from the figure four observations (townships and township grouping), all in northern Frontenac, recorded negative net incomes per farm in 1995. Across all the other townships, save one, net farm income (shown in three categories) ranges from \$2,160 to \$17,384. There is no neat spatial pattern discernible, although there is a tendency for the lower value (\$2000-5000) to be more common in Frontenac and Lennox-Addington, while 5 of 6 townships on the \$10,000-\$20,000 range are in Leeds-Grenville. A notable feature of Figure 21 is the unique position of Elizabethtown with a net income per farm of \$43,579.

The case of Adolphustown and Elizabethtown are instructive in regard to the earlier observation that while gross farm receipts are one measure of the size of the farm enterprise they are not necessarily a good measure of profitability. In 1996 Adolphustown

reported the highest gross farm receipts per farm at \$266,000 and Elizabethtown was second at \$191,000. In terms of net income per farm, on the other hand, Adolphustown, at \$7,910, ranked fourteenth among the townships while Elizabethtown at \$43,579 not only ranked first, but recorded a net income per farm 2.5 times that of the next highest township (South Fredericksburg at \$17,384).

2.9.2 Census Subdivision Shares of Study Area Net Farm Income

For the study area in 1995 net farm income (total gross farm receipts – total expenses) totaled about 26.5 million dollars. Figure 22 displays each township's share of this total in percentage terms and demonstrates dramatically the uneven distribution of net farm income across the study area. The township of Elizabethtown with 4.6% of the study areas farm land and about 5.1% of the crop land accounted for over 26% of the total net farm income. An additional 9 townships (2 in Lennox-Addington, 2 in Frontenac and 5 in Leeds-Grenville) with anywhere from 3-7% of the total collectively accounted for 45.8% of the total while accounting for 35.5% of the farm land and 40.3% of the crop land. The remaining townships, with shares shown in the three lowest categories, collectively accounted for only about 28% of the total but for about 60% of the farm land and 55% of the crop land. The data is consistent across variables in identifying the northern townships of Lennox and Addington and Frontenac as less productive parts of the study area, a finding which corresponds with the presence of geological features in the north (Canadian Shield) that place restrictions on many types of agricultural activity.

**Figure 20. Total expenses as a percent of gross
farm receipts, 1995**

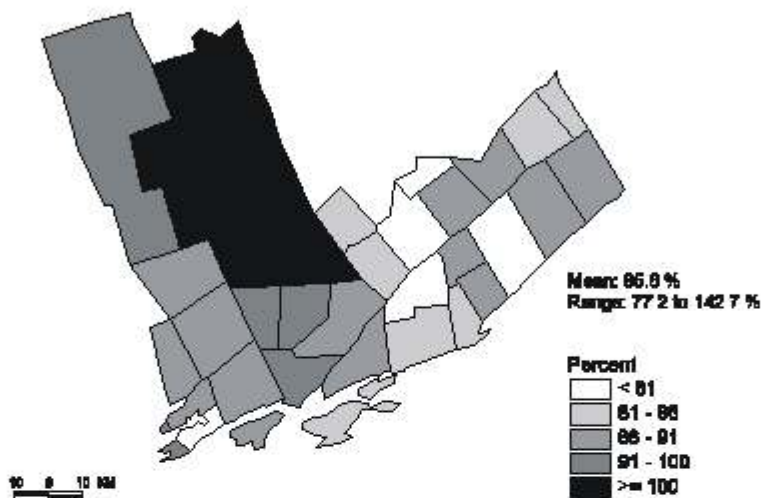


Figure 21. Net farm income per farm, 1995

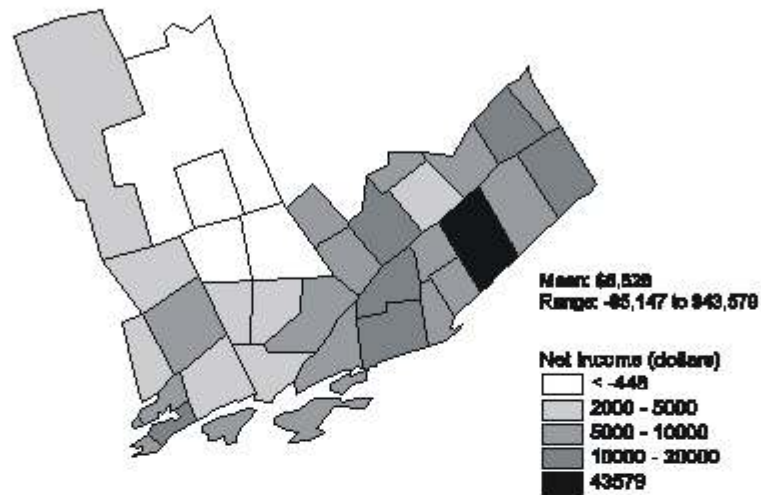
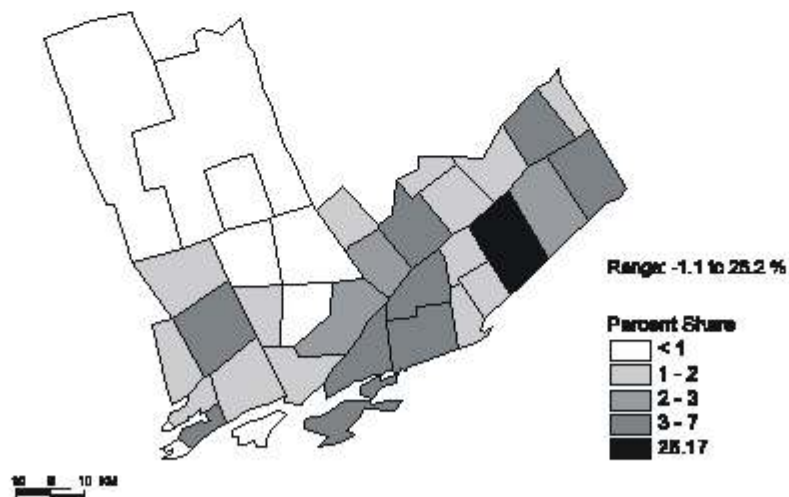


Figure 22. Census subdivision shares (%) of study area net farm income, 1995



2.10 Summary

Agriculture is an exceedingly diverse industry. Aggregate data on various attributes of agriculture both reveal and conceal aspects of this diversity. Data, as presented on Table 1, provide one perspective which make possible comparisons between the study area, the Eastern Ontario Region (of which it is a part) and the province.

Figures 2 to 22 provide data on attributes at the scale of the census subdivisions that reveal aspects of the enormous diversity that exists across the study area, but since again these data are based on aggregates of farms they reveal contrasts between CSDs but conceal diversity within CSDs.

The contrasts between and among the CSDs of the study area are in all cases considerably greater than the contrasts between the study area and the province. For example, while farms average 250 acres in size they range in size from 119 to 422 acres. Acres of crop land per farm average 99 acres but range from 33 to 205 acres. Gross receipts per farm average \$60,000 but range from \$12,000 to \$266,000, while gross receipts per acre of farm land average \$239 but range from \$33 to \$859. Finally, net income per farm averages \$8,628 but at the CSD scale ranges from - \$5,147 to \$43,579. So at the CSD scale, which to greater or lesser degrees aggregates unlike enterprises together, the diversity exhibited is enormous. One suspects that the diversity exhibited at the CSD scale across the study area is in part a reflection of the bio-physical diversity.

However, we suspect that the disparate levels of economic performance between and among the CSDs of the study area are a reflection of other factors as well. In particular, the concentration of certain farm types in a given region appears to influence variation between neighbouring townships. When we compare the farm type profile of Elizabethtown to Augusta we find that the two areas share an almost equivalent number of farms (159 vs. 142) with many farm types closely corresponding in number. However, Elizabethtown stands apart from Augusta in the number of dairy farms it has (37 farms vs. 19 farms) which account for just over 23% of all farms in the township, whereas dairy farms in Augusta township represent only 13% of the total.⁷ Differences in total gross receipts between the townships in 1995 is dramatic, \$30.4 million for Elizabethtown versus \$6.5 million for Augusta. This finding points to the important influence that the dairy sector continues to have alongside other farm types in the study area.

⁷ The breakdown of farms by type for Elizabethtown vs. Augusta is as follows: Dairy (37 farms vs. 19 farms); Beef (41 vs. 48); Hog (3 vs. 2); Poultry and Egg (1 vs. 1); Grain (2 vs. 7); Field Crop (11 vs. 11); Fruit (3 vs. 2); Vegetable (1 vs. 1); Specialty (22 vs. 22); Combination (7 vs. 1). Source: Statistics Canada, Agriculture Profile 1996.

3.0 A Profile of the Economies of Frontenac, Leeds and Grenville, and Lennox and Addington Counties.

3.1 Introduction

This section of the report will provide a profile of the economy of the study area. The lead off section will focus on population and population change, changes in family income distribution and changes in employment by industrial sector. The second half of this section serves to compliment the earlier mapping component with a profile of the agriculture sector in the study area and an examination of how the local agri-sector compares to agriculture in the Eastern Ontario Region and the province of Ontario.

3.2 Population and Population Change

Between 1991 and 1996, the population of the study area⁶ increased from 256,567 to 271,852. This represents a 6% increase which is slightly below the pace of growth experienced in the Eastern Ontario region⁷ and the province of Ontario (Table 4). Taken as individual counties, Leeds County experienced the second lowest rate of population growth (4.32%) in the Eastern Ontario region while Grenville recorded the highest rate in the region (11.34%). Looking at the population data associated with the current municipal boundaries, when we exclude the cities of Kingston (Frontenac) and Brockville (Leeds and Grenville), the population of the study area was 127,150 in 1991 and 137,495 in 1996 (Appendix B). The rate of population growth for the study area excluding these two cities is 8% which suggests that the smaller communities and rural areas of the study area are experiencing a higher rate of growth.

⁶ Study Area includes counties of Frontenac, Leeds and Grenville, and Lennox and Addington.

⁷ Eastern Ontario Region includes: Frontenac County, Lanark County, Leeds and Grenville United Counties, Lennox and Addington County, Ottawa-Carleton Regional Municipality, Prescott and Russell United Counties, Renfrew County, and Stormont, Dundas and Glengarry United Counties.

Table 4. Population and Percent Change for Study Area ^a, Eastern Ontario ^b, and Ontario, 1991 - 1996.

Region	1991	1996	Percent Change
<i>Frontenac County</i>	129,089	136,365	5.64%
<i>Leeds County</i>	59,608	62,185	4.32%
<i>Grenville County</i>	30,627	34,099	11.34%
<i>Lennox and Addington County</i>	37,243	39,203	5.26%
Study Area	256,567	271,852	5.96%
Lanark County	54,803	59,845	9.20%
Ottawa-Carleton Regional Municipality	678,147	721,136	6.34%
Prescott and Russell County	67,183	74,013	10.17%
Renfrew County	91,685	96,224	4.95%
Stormont, Dundas & Glengarry County	107,841	111,301	3.21%
Eastern Ontario	1,256,226	1,334,371	6.22%
Ontario	10,084,885	10,753,573	6.63%

^a Study Area includes counties of Frontenac, Leeds and Grenville, and Lennox and Addington.

^b Eastern Ontario Region includes: Frontenac County, Lanark County, Leeds and Grenville United Counties, Lennox and Addington County, Ottawa-Carleton Regional Municipality, Prescott and Russell United Counties, Renfrew County, and Stormont, Dundas and Glengarry United Counties.

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

All of the townships in the study area experienced growth in population between 1991 and 1996. Only one census subdivision in the study area experienced a decline in population, the town of Prescott (-0.71%) located in Grenville County. The highest rate of population growth in the study area occurred in North Grenville township (24.04%) which is made up of the town of Kemptville, and the former townships of South Gower and Oxford-on-Rideau. Growth rates associated with South Gower and Oxford-on-Rideau were 24.7% and 28.3% respectively, eclipsing the rate of growth experienced in Kemptville (19.6%). Central Frontenac township recorded the largest growth rate in Frontenac County (13.84%) and Addington Highlands township recorded the largest growth rate in Lennox and Addington County (10.76%). In Leeds County the township of Kitley experienced the highest rate of growth between 1991 and 1996 (12.32%). Additional details are provided in Appendix B and C. Interestingly, the townships that recorded the highest growth rates in Frontenac, Lennox and Addington, and Leeds, do not have major 'service centres' within their boundaries as is the case with North Grenville which has Kemptville as its service centre. Furthermore, these townships are not in close proximity to any of the major service centres in the study area such as Napanee, Kingston, Ganonoque or Brockville.

In an area where soil resources are limited relative to other regions of the province, policymakers and planners have a key role to play in balancing urban and rural non-farm development with the needs of agriculture to ensure that the local economy continues to benefit from the direct and indirect effects of agriculture.

3.3 Family Income Distribution

A comparison of family income distribution in the study area relative to the Eastern Ontario region, Ontario and Canada, is provided in Table 5. In 1991 and 1996, the study area had relatively fewer family numbers in the two lowest income groups compared to Ontario and Canada. In 1996, 13.5% of families in the study area had incomes of less than \$20,000 per year. In contrast, the corresponding numbers for Ontario and Canada were 13.8% and 15.7% (Table 5).

With respect to the higher income categories, the study area did not perform as well as Eastern Ontario, Ontario or Canada. In 1996, 24.5% of families in the study area had an annual income of \$70,000 or more. The corresponding proportions for Canada and Ontario were 25.7% and 30.9% respectively. The Eastern Ontario region exceeded both the national and provincial figure with 32.2% of families in the region earning \$70,000 or more annually.

There was a degree of variation between the counties in the study area. Grenville had the lowest proportion of family numbers in the two lowest income groups with 11.86% while Lennox and Addington had the highest proportion at 14.67%, slightly above the provincial figure (Table 6). Each of the four counties experienced an increase in the proportion of families earning incomes of \$70,000 or more between 1991 and 1996. This was consistent with the general pattern across Ontario and Canada.

Table 5. Family Income Distribution for Canada, Ontario, Eastern Ontario and the Study Area, 1991 and 1996.

Family Income Categories	Canada				Ontario			
	1991		1996		1991		1996	
	Number of families	% of total	Number of families	% of total	Number of families	% of total	Number of families	% of total
Under \$10,000	367460	5.00%	435760	5.56%	119990	4.40%	148050	5.05%
\$10,000 - \$19,999	793465	10.79%	795895	10.15%	224535	8.23%	256625	8.75%
\$20,000 - \$29,999	955870	12.99%	1007840	12.86%	301000	11.04%	332130	11.32%
\$30,000 - \$39,999	1043170	14.18%	992020	12.66%	344810	12.65%	336440	11.47%
\$40,000 - \$49,999	1028100	13.98%	968900	12.36%	368185	13.50%	340330	11.60%
\$50,000 - \$59,999	906130	12.32%	883520	11.27%	348825	12.79%	324365	11.06%
\$60,000 - \$69,999	692940	9.42%	736990	9.40%	288045	10.56%	289155	9.86%
\$70,000 and over (1991)	1568585	21.32%	568055	7.25%	731230	26.82%	235015	8.01%
\$70,000 - \$79,000 (1996)								
\$80,000 - \$89,999			416740	5.32%			179905	6.13%
\$90,000 - \$99,999			286875	3.66%			127950	4.36%
\$100,000 and over			745265	9.51%			362765	12.37%
Total families	7355720		7837860		2726620		2932730	
Average income, family (\$)	51342		54583		57227		59830	
Median income, family (\$)	44848		46951		50046		51520	

	Eastern Ontario				Study Area			
	1991		1996		1991		1996	
	Number of families	% of total	Number of families	% of total	Number of families	% of total	Number of families	% of total
Under \$10,000	13035	3.84%	13910	3.84%	2680	3.77%	2860	3.77%
\$10,000 - \$19,999	28440	8.38%	31930	8.81%	6935	9.75%	7395	9.74%
\$20,000 - \$29,999	35910	10.59%	39200	10.81%	9240	12.99%	9540	12.56%
\$30,000 - \$39,999	42155	12.43%	40315	11.12%	10585	14.88%	10025	13.20%
\$40,000 - \$49,999	44890	13.23%	42565	11.74%	10980	15.43%	10110	13.31%
\$50,000 - \$59,999	42170	12.43%	41325	11.40%	9240	12.99%	9350	12.31%
\$60,000 - \$69,999	35990	10.61%	36675	10.12%	7100	9.98%	8015	10.56%
\$70,000 and over (1991)	96615	28.48%	29400	8.11%	14330	20.14%	5830	7.68%
\$70,000 - \$79,000 (1996)								
\$80,000 - \$89,999			23280	6.42%			4065	5.35%
\$90,000 - \$99,999			16585	4.58%			2625	3.46%
\$100,000 and over			47370	13.07%			6115	8.05%
Total families	339205		362475		71140		75930	

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Table 6. Family Income Distribution for Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, 1991 and 1996^a .

Family Income Categories	Leeds County				Frontenac County			
	1991		1996		1991		1996	
	Number	%	Number	%	Number	%	Number	%
Under \$10,000	720	4.21%	645	3.57%	1300	3.76%	1385	3.77%
\$10,000 - \$19,999	1705	9.96%	1810	10.03%	3355	9.70%	3485	9.49%
\$20,000 - \$29,999	2425	14.17%	2365	13.11%	4130	11.95%	4230	11.52%
\$30,000 - \$39,999	2800	16.36%	2715	15.05%	4720	13.65%	4555	12.41%
\$40,000 - \$49,999	2685	15.69%	2415	13.38%	5230	15.13%	4760	12.96%
\$50,000 - \$59,999	2215	12.95%	2140	11.86%	4430	12.81%	4460	12.15%
\$60,000 - \$69,999	1705	9.96%	1935	10.72%	3490	10.09%	3975	10.83%
\$70,000 and over (1991)	2855	16.69%	1390	7.70%	7920	22.91%	2855	7.78%
\$70,000 - \$79,999 (1991)								
\$80,000 - \$89,999			1025	5.68%			1960	5.34%
\$90,000 - \$99,999			490	2.72%			1345	3.66%
\$100,000 and over			1115	6.18%			3705	10.09%
Total families	17110		18045		34575		36715	
Average family income \$			52031				56450	
Median family income \$			47354				49905	

Family Income Categories	Lennox and Addington County				Grenville County			
	1991		1996		1991		1996	
	Number	%	Number	%	Number	%	Number	%
Under \$10,000	405	3.86%	525	4.71%	275	3.09%	295	2.98%
\$10,000 - \$19,999	1135	10.81%	1225	10.99%	710	7.98%	880	8.88%
\$20,000 - \$29,999	1470	14.01%	1650	14.80%	1205	13.54%	1285	12.97%
\$30,000 - \$39,999	1595	15.20%	1435	12.88%	1455	16.35%	1305	13.18%
\$40,000 - \$49,999	1650	15.72%	1625	14.58%	1400	15.73%	1285	12.97%
\$50,000 - \$59,999	1460	13.91%	1455	13.06%	1175	13.20%	1290	13.02%
\$60,000 - \$69,999	1035	9.86%	920	8.25%	870	9.78%	1180	11.91%
\$70,000 and over (1991)	1745	16.63%	720	6.46%	1810	20.34%	845	8.53%
\$70,000 - \$79,999 (1996)								
\$80,000 - \$89,999			500	4.49%			575	5.81%
\$90,000 - \$99,999			420	3.77%			350	3.53%
\$100,000 and over			670	6.01%			615	6.21%
Total families	10495		11145		8900		9905	
Average family income \$			48984				52031	
Median family income \$			44739				47354	

^a Average and Median income values for Leeds and Grenville in 1996 reflect combined values.

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

3.3 Employment and Employment Change

In 1996 the economy of the study area supported 133,370 jobs, 475 fewer jobs than it supported in 1991. In terms of its contribution to the economy of Eastern Ontario and the province, the study area accounts for just under 20% of all jobs in the region and 2.5% of the jobs in Ontario. As illustrated in Table 7, retail, manufacturing, and health and social service industries, made up the top three employment sectors (SIC categories) in the study area in 1996.⁸ Retail supported 17,840 jobs in the study area while manufacturing employed 17,170 and health and social services supported 16,845 jobs.

Employment in manufacturing in 1996 accounted for 12.86% of the total jobs in the study area. The study area had a higher proportion of its total workforce in manufacturing than the Eastern Ontario region as a whole (10.15%) but a lower proportion relative to Ontario where manufacturing jobs account for 17.08% of the provincial workforce. Taken individually however, two of the counties in the study area, Leeds and Grenville, have substantial representation in the manufacturing sector, eclipsing the provincial average. Close to 21% of the total workforce in Leeds County is employed in the manufacturing sector while manufacturing supports almost 19% of the total workforce in Grenville County (Appendix E). Major manufacturing firms located in the United Counties of Leeds and Grenville include SCI Systems Inc. (telecommunications equipment - 1,550 employees), DuPont Canada (specialty chemicals - 650 employees), Proctor and Gamble (laundry/cleaning products - 300 employees), Shorewood Packaging (paperboard packaging - 280 employees) and 3M Canada (pressure sensitive tape, respiratory and environment filters - 250 employees). Most large manufacturing firms in Leeds and Grenville are located in Brockville and Maitland, near major road and rail transportation arteries.⁹

Manufacturing was a 'growth' sector for the study area between 1991 and 1996 generating an additional 500 jobs. It is important to note that this growth occurred during a period when Ontario lost over 20,000 jobs in the manufacturing sector. The increase in manufacturing jobs for the study area is consistent with an increase in manufacturing jobs in the Eastern Ontario region as a whole (Table 8). However, the Eastern Ontario region experienced a greater rate of job creation in manufacturing at 7.85% than was achieved by the study area (3.0%) during the same period. Furthermore, job creation in this sector was not homogenous across the study area. Indeed, while a total of 1,100 new manufacturing jobs were created in Leeds and Grenville, job losses were experienced in Frontenac County (-490 jobs) and Lennox and Addington County (-165 jobs) between 1991 and 1996 (Appendix F).

⁸ The SIC divisions refer to the Standard Industrial Classification (1980) system which categorizes the Canadian economy into different productive (industrial) categories or classifications. At the greatest level of aggregation the economy is divided into 18 divisions.

⁹ According to Statistics Canada, a small business employs one to fifty people; a medium business employs 51 to 250 people and a large business employs over 250 people.

Despite these job losses, there are a number of significant manufacturing firms located in Frontenac and Lennox and Addington. In Frontenac, major manufacturing firms are largely located in and around the city of Kingston and include companies such as DuPont Canada (nylon fibre/research and development - 1,510 employees), NORCOM/CDT (copper based wire and cable for telecommunications - 465 employees), and Alcan (research and development for aluminum fabrication - 373 employees).

Manufacturing does not appear to be as centralized in one location of Lennox and Addington as it is in Leeds, Grenville and Frontenac. Indeed, several communities in Lennox and Addington including Napanee, Millhaven and Bath, are bases for manufacturing firms. However, Lennox and Addington has fewer large manufacturing firms than the other counties in the study area. Major manufacturing firms in Lennox and Addington include Good Year Canada (tires - 650 employees) and Bombardier Transportation (passenger rail equipment and integrated transit systems - 620 employees). Medium sized firms include KoSa (polyester resins - 140 employees) Gibbard Furniture Shops Ltd. (furniture manufacturers - 125 employees), and LaFarge Canada Ltd. (cement - 110 employees). A list of additional manufacturers located in the study area is presented in Appendix D.

These observations indicate that manufacturing is largely a feature of the southern portion of the study area with much of it concentrated in a few urban centres. This is not the case with the manufacturing sector in Huron County where it was observed to have a strong presence throughout the region in many of the smaller communities (Cummings et al., 1998; Murray, 2000). Indeed, while agriculture in Huron County has traditionally outshone manufacturing in terms of employment, manufacturing now employs an equivalent number of people in the county with many of these jobs being agri-related. Manufacturing firms in Huron County have clearly benefitted from pursuing industrial linkages with agriculture. In some instances, businesses have built upon their established trade in agri-related goods and expanded into products for other industrial sectors. When looking at promoting industrial development in the study area, planners, policymakers and business interests should consider examining the opportunities associated with the local agriculture sector.

In 1996, the retail sector accounted for the single largest share of employment in the study area. At 13.36%, the proportion of employment in retail in the study area was slightly higher than in the Eastern Ontario region and Ontario where retail jobs accounted for 11.72% and 12.27% respectively. Of the four counties, Frontenac had the highest number of employees in retail (8,610) while Lennox and Addington had the highest proportion of its workforce (15.33%) in retail (Appendix E).

As with manufacturing, retail was a growth sector for the study area between 1991 and 1996. Indeed, the creation of 735 jobs in retail between 1991 and 1996, represented a 4.3% increase for the study area while net job losses in retail employment were

experienced at the regional (Eastern Ontario), provincial (Ontario) level (Table 8). Frontenac County, Leeds County and Lennox and Addington County each gained over 200 jobs in this sector while Grenville County experienced a slight loss (-30 jobs) between 1991 and 1996 (Appendix F).

The health and social services sector was the third largest employer in the study area in 1996, accounting for 12.62% of the total workforce. The study area had a slightly higher proportion of its total workforce in health and social services than was found in the economies of Eastern Ontario (10.37%) and Ontario (9.51%).

Health and social service jobs make up a greater proportion of the total workforce in Frontenac (14%) than is the case in Lennox and Addington (11.53%), Leeds (11.39%) and Grenville (10.33%) (Appendix E). Although the creation of 1,310 jobs in this sector between 1991 and 1996 represents an increase of 8.44%, the growth was comparatively less than the growth experienced at the provincial level where health and social service jobs experienced an overall increase of 12.36% (Table 8). Interestingly, while Frontenac, Grenville, and Lennox and Addington recorded job gains of 715, 315 and 300 respectively, Leeds County lost a small number of jobs (-15 jobs) in the health and social services sector between 1991 and 1996 (Appendix F).

The economy of the study area supports a greater proportion of government service sector jobs than the provincial economy. While government service sector jobs accounted for 5.64% of all jobs in the provincial economy, close to 10% of all jobs in the study area were in the government services sector in 1996. As noted earlier, these jobs are not distributed evenly throughout the study area. Government jobs account for 12.53% of all jobs in Frontenac and 9.56% of all jobs in Grenville. In Lennox and Addington (7.53%) and Leeds County (5.31%) the proportion of government service jobs is closer to the Ontario figure (Appendix E).

Employment in the government services sector suffered a setback in the study area between 1991 and 1996 with the loss of 2,800 jobs representing a 17.63% decline. However, the rate of government job losses associated with the economies of the Eastern Ontario region and Ontario between 1991 and 1996 were more severe at -20.97% and -25.96% respectively (Table 8). Again, the data indicates that the rate of job loss was not consistent across the study area. Although Frontenac County experienced the largest decline in absolute numbers (-1400), the largest loss as a percentage occurred in Leeds County where government service jobs declined by 33.6% (Appendix F).

Consistent with employment in government and employment in health and social services, the study area supports a greater proportion of education service sector jobs than the provincial economy. Employment in education services accounted for 9.48% of the total workforce in the study area in 1996 compared to a figure of 6.84% for Ontario. The study area also recorded a higher proportion of jobs in education services than the

Eastern Ontario region (7.78%).

When we examine employment activity at the county level, we once again find a degree of variation between the counties. Indeed, while educational service jobs accounted for 12.8% of the total workforce in Frontenac in 1996, the proportion of educational jobs in Leeds and Grenville was actually below the standard for Ontario (Appendix E).

Close to 900 jobs in the education service sector were lost in the study area between 1991 and 1996. Furthermore, the study area experienced a negative growth rate of -6.51% in this sector compared to positive growth rates in the Eastern Ontario region (1.26%) and Ontario (1.12%). Although Frontenac County experienced the largest loss in terms of job numbers (-750 jobs), the job losses in the education services sector in Leeds and Grenville were proportionally greater (Appendix F).

As a combined category, the public service sector (government, education and health and social services) is a key component of the local economy accounting for 42,565 jobs or 30% of the total employment in the study area. These jobs are primarily concentrated in Frontenac County where 62% of all government, education, and health and social services jobs in the study area are located. Major public sector employers in Frontenac include Canadian Forces Base Kingston (4,787 employees), Queens University (3,800), Limestone District School Board (2,710), Correctional Services (2,670), and Kingston General Hospital (2,324). Major public sector employers in Leeds and Grenville include the Upper Canada District School Board (1,575 employees), Brockville Psychiatric Hospital (625), and Brockville General Hospital (500). Additional public sector employers in the study area are presented in Appendix D.

Agriculture directly supported 4,325 jobs in the study area in 1996.¹⁰ Employment in agriculture is proportionally higher in the study area (3.24%) than in the Eastern Ontario region (2.48%) and Ontario (2.43%). When we look at the employment figures for each individual county in the study area, we find that agriculture in Leeds, Grenville and Lennox and Addington accounts for over 4% of the total workforce in each county. In Frontenac, jobs in agriculture represent only 1.62% of the total workforce. This low value is a reflection of the magnitude of the public service sector in the county. In terms of absolute numbers,

¹⁰ Agriculture employment figures are derived from the Statistics Canada Population Census, Labour Market Activities: Industry. The 1991 and 1996 industry data are produced according to the 1980 Standard Industrial Classification. This classification consists of a systematic and comprehensive arrangement of industries structured into 18 Divisions, 75 Major Groups and 296 Groups. These industrial groups are based on the general nature of the establishment's business, industry or service. Employment figures for agriculture are taken from Division D - Agricultural and Related Service Industries. A profile of the types of industries/services included in this Division is provided in Appendix Q. The available data reports on the population 15 years of age and over, excluding institutional residents. If the person did not have a job during the week prior to enumeration, data relate to the job of longest duration during the year prior to the census.

Frontenac actually supports more jobs in agriculture than either Grenville or Lennox and Addington (Appendix E).

Frontenac also shares a distinction with Grenville in that both counties experienced increases in agriculture jobs between 1991 and 1996. In contrast, Leeds County and Lennox and Addington County lost jobs in the agriculture sector during the same period (Appendix F). Overall, jobs in agriculture in the study area declined by 1.59% between 1991 and 1996. However, job losses in agriculture recorded at the regional and provincial level, were much more severe with declines of 4.65% and 6.31% respectively. Given the loss of over 8,000 agriculture jobs in Ontario between 1991 and 1996, it is remarkable that parts of the study area experienced job growth in this sector.

In summary, the structure of the study area economy as measured by employment by industrial sector is predominantly service sector based (Figure 23). The presence of a number of large government, education and health and social service institutions in the study area, contributes to the overall dominance of the service sector in the local economy. Service sector jobs account for 83.6% of all jobs in the study area while the proportion for the Ontario economy in 1996 was 80%. Conversely, the study area has a lower proportion of jobs in the goods producing sector¹¹ than the province.

Although the economy of the study area experienced an overall decline in jobs between 1991 and 1996, the loss was less extensive relative to the proportion of job losses experienced in the Eastern Ontario region and the province of Ontario. While the study area experienced a job decline of 0.25% between 1991 and 1996, the Eastern Ontario region and the province recorded job loss rates of 0.8% and 0.62% respectively.

Manufacturing was a growth sector for the study area with job gains centered in Leeds and Grenville County. The study area also experienced job increases in the retail and wholesale sector. Job gains in both the manufacturing and retail sector are notable because they occurred at a time when the provincial economy experienced job losses in these sectors. Further research would be beneficial in determining the type of manufacturing that is supporting employment growth (small scale vs. large scale; new manufacturing development vs. expansion of existing manufacturing base; etc.).

Agriculture in the study area did not experience the types of employment fluctuations that occurred in other sectors but rather maintained a degree of stability between 1991 and 1996.

¹¹ Goods producing sector includes the following SIC categories: Agriculture and related service industries, Fishing and trapping industries, Logging and forestry industries, Mining industries, and Manufacturing industries.

**Table 7 Employment by Standard Industrial Classification Divisions
(SIC 1980)^a for Study Area ^b, Eastern Ontario ^c, and Ontario, 1996.**

Industrial Sector Description	Study Area		Eastern Ontario		Ontario	
	Number of Jobs	Percent	Number of Jobs	Percent	Number of Jobs	Percent
Agricultural and related services	4325	3.24%	16810	2.48%	131060	2.43%
Fishing and trapping	25	0.02%	75	0.01%	1915	0.04%
Logging and forestry	250	0.19%	1295	0.19%	11405	0.21%
Mining (incl. milling), quarrying & oil	175	0.13%	655	0.10%	26050	0.48%
Manufacturing	17145	12.86%	68935	10.15%	922565	17.08%
Construction	8355	6.26%	35440	5.22%	290430	5.38%
Transportation and storage	4555	3.42%	21545	3.17%	198555	3.68%
Communication and other utility	2965	2.22%	20430	3.01%	173040	3.20%
Wholesale trade	4600	3.45%	23295	3.43%	278220	5.15%
Retail trade	17830	13.37%	79610	11.72%	662815	12.27%
Finance and insurance	2825	2.12%	17400	2.56%	228880	4.24%
Real estate and insurance	2135	1.60%	12155	1.79%	111890	2.07%
Business service industries	6160	4.62%	59265	8.73%	411070	7.61%
Government service industries	13080	9.81%	101650	14.97%	304640	5.64%
Educational service industries	12640	9.48%	52830	7.78%	369320	6.84%
Health and social service industries	16830	12.62%	70380	10.37%	513615	9.51%
Accommodation, food and beverage	10250	7.69%	44305	6.52%	350945	6.50%
Other service industries	9220	6.91%	52930	7.80%	414980	7.68%
Total All Divisions	133370	100.00	679005	100.00	5401395	100.00

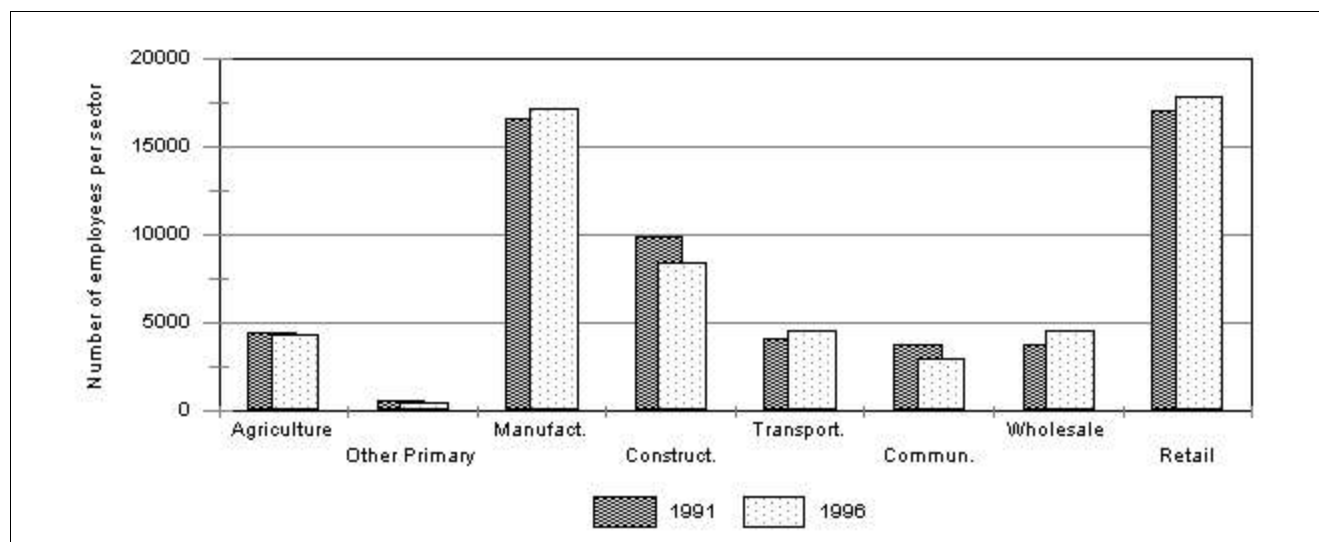
^a The SIC divisions refer to the Standard Industrial Classification (1980) system which categorizes the Canadian economy into different productive (industrial) categories or classifications. At the greatest level of aggregation the economy is divided into 18 divisions.

^b Study Area includes counties of Frontenac, Leeds and Grenville and Lennox and Addington.

^c Eastern Ontario Region includes: Frontenac County, Lanark County, Leeds and Grenville United Counties, Lennox and Addington County, Ottawa-Carleton Regional Municipality, Prescott and Russell United Counties, Renfrew County, and Stormont, Dundas and Glengarry United Counties.

Source: Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions.

Figure 23. Employment by Industrial Sector ^a for the Study Area ^b,



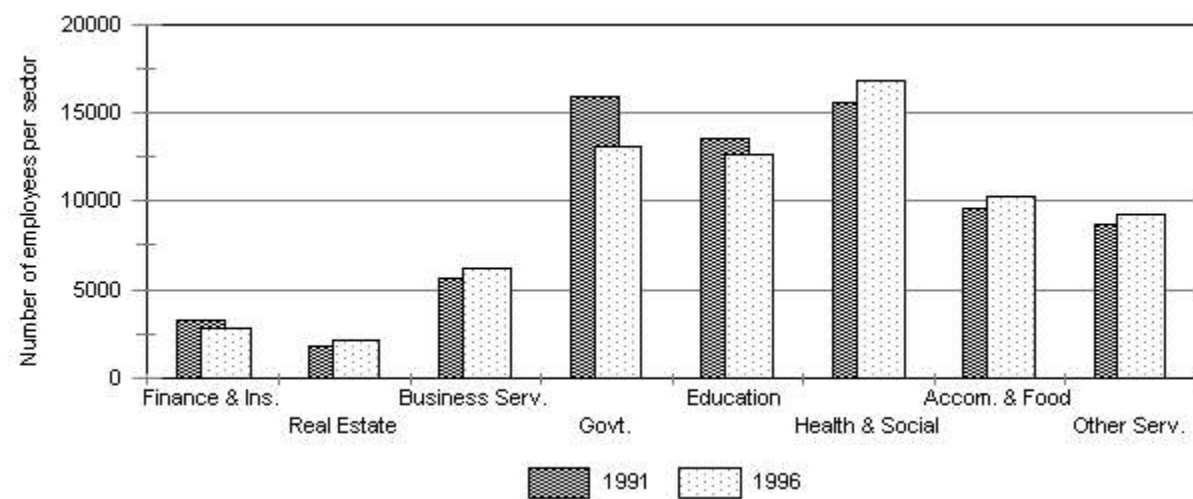
^a Other primary industries include fishing & trapping, logging and forestry, and mining industries.

^b Study Area includes counties of Frontenac, Leeds, Grenville, and Lennox and Addington.

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

1991 and 1996.

Figure 23 (cont.). Employment by Industrial Sector for the Study Area, 1991 and 1996.



Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Table 8. Employment and Employment Change by Standard Industrial Classification Divisions (SIC 1980)^a for Study Area ^b, Eastern Ontario ^c, and Ontario, 1991-1996.

SIC Industrial Sector Description	Study Area				Eastern Ontario				Ontario			
	1991	1996	Total change	% Change	1991	1996	Total change	% Change	1991	1996	Total change	% Change
Agricultural and related services	4395	4325	-70	-1.59%	17630	16810	-820	-4.65%	139880	131060	-8820	-6.31%
Fishing and trapping	60	25	-35	-58.33%	115	75	-40	-34.78%	1965	1915	-50	-2.54%
Logging and forestry	165	250	85	51.52%	1560	1295	-265	-16.99%	13965	11405	-2560	-18.33%
Mining (incl. milling), quarrying, oil	285	175	-110	-38.60%	970	655	-315	-32.47%	34355	26050	-8305	-24.17%
Manufacturing	16645	17145	500	3.00%	63920	68935	5015	7.85%	942995	922565	-20430	-2.17%
Construction	9855	8355	-1500	-15.22%	41770	35440	-6330	-15.15%	358890	290430	-68460	-19.08%
Transportation and storage	4090	4555	465	11.37%	20155	21545	1390	6.90%	187830	198555	10725	5.71%
Communication and other utility	3705	2965	-740	-19.97%	25335	20430	-4905	-19.36%	188630	173040	-15590	-8.26%
Wholesale trade	3715	4600	885	23.82%	19300	23295	3995	20.70%	233915	278220	44305	18.94%
Retail trade	17095	17830	735	4.30%	82370	79610	-2760	-3.35%	700925	662815	-38110	-5.44%
Finance and insurance	3275	2825	-450	-13.74%	20520	17400	-3120	-15.20%	253135	228880	-24255	-9.58%
Real estate and insurance	1790	2135	345	19.27%	9835	12155	2320	23.59%	100090	111890	11800	11.79%
Business service	5600	6160	560	10.00%	52760	59265	6505	12.33%	367200	411070	43870	11.95%
Government service	15880	13080	-2800	-17.63%	128630	101650	-26980	-20.97%	411450	304640	-106810	-25.96%
Educational service	13520	12640	-880	-6.51%	52175	52830	655	1.26%	365235	369320	4085	1.12%
Health and social service	15520	16830	1310	8.44%	64560	70380	5820	9.01%	457115	513615	56500	12.36%
Accommodation, food & beverage	9590	10250	660	6.88%	40475	44305	3830	9.46%	322955	350945	27990	8.67%
Other service industries	8660	9220	560	6.47%	42695	52930	10235	23.97%	355310	414980	59670	16.79%
Total all divisions	133845	133370	-475	-0.35%	684775	679005	-5770	-0.84%	5435840	5401395	-34445	-0.63%

^a 'Accommodation, food and beverage' category includes: *Accommodation Service Industries* (Hotels, motels and tourist courts; Lodging houses & residential clubs; Camping grounds and travel trailer parks; Recreation and vacation camps) and *Food and Beverage Service Industries* (Food services; Taverns, bars and nightclubs). 'Other service' category includes: *Amusement and Recreational Service Industries*, *Personal and Household Service Industries*, *Membership Organization Industries*, and *Other Service Industries* (Machinery and equipment rental and leasing services; Automobile and truck rental and leasing services; Photographers; Other repair services; Services to buildings and dwellings; Travel services). Services relevant to agriculture in the 'other service' category include machinery and equipment rental and leasing, welding shops that repair farm equipment and auctioneers providing services for livestock and farm equipment owners.

^b Study Area includes counties of Frontenac, Leeds, Grenville, and Lennox and Addington.

^c Eastern Ontario Region includes: Frontenac County, Lanark County, Leeds and Grenville United Counties, Lennox and Addington County, Ottawa-Carleton Regional Municipality, Prescott and Russell United Counties, Renfrew County, and Stormont, Dundas and Glengarry United Counties.

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

3.4 Agriculture in the Study Area

As noted earlier, the study area has a more limited availability of class one, two and three soil types (21% of the total study area) than other regions of the province. Despite these limitations, agriculture makes a substantial contribution to the local economy in terms of generating income and providing employment. This section of the report will revisit some of the 'aspects of agriculture' presented in Section 2, emphasizing changes specific to the 1991-1996 period.

3.4.1 Number of Farms ¹² in the Study Area

The total number of farms¹³ in the study area in 1996 was 3,069 compared to 2,951 farms in 1991¹⁴. The growth in farm numbers represents a 4% increase. During the same period, the Eastern Ontario region experienced a 1.7% decline in farm numbers while Ontario experienced a 1.6% decline in farm numbers. In 1996, 29% of the farms in the Eastern Ontario region were located in the study area compared to 27.7% in 1991 (Table 9). In 1996, farms in the study area accounted for 4.5% of the provincial total.

Almost 30% of all farms in the study area are located in Leeds County (904 farms) with 26.8% in Frontenac (823 farms), 24.5% in Lennox and Addington County (753 farms) and 19.2% in Grenville County (589 farms). Between 1991 and 1996 Frontenac, Leeds, and Lennox and Addington, experienced increases in farm numbers while Grenville farm numbers declined by 7.4% (Table 9).

¹² In 1996, Statistics Canada defined a census farm as an agricultural operation that produces at least one of the following products intended for sale: crops (field crops, tree fruits or nuts, berries or grapes, vegetables or seed); livestock (cattle, pigs, sheep, horses, exotic animals, etc.); poultry (hens, chickens, turkeys, exotic birds, etc.); animal products (milk or cream, eggs, wool, fur, meat); or other agricultural products (greenhouse or nursery products, Christmas trees, mushrooms, sod, honey, maple syrup products). The definition of a census farm was expanded for the 1996 Census of Agriculture to include commercial poultry hatcheries and operations that produced only Christmas trees. This expanded definition resulted in the inclusion of 138 commercial poultry hatcheries and 1,593 operations across Canada that produced only Christmas trees.

¹³ Farm numbers are based on farms reporting farm gate sales of \$2,500 or more. This classification is used to omit small hobby farms that might have skewed the results.

¹⁴ The 1996 agriculture census included Christmas tree farms as part of the inventory of farms. This, in part, may account for some of the increase in farm numbers in the study area between 1991 and 1996. In 1996, 73 farms in the study area reported growing Christmas trees on a total land base of 1,510 acres. Sixty-two percent of these farms are located in Leeds and Grenville County. The 73 farms in the study area constitute 30% of the total farms in the Eastern Ontario region that reported growing Christmas trees in 1996 (Statistics Canada, 1996).

3.4.2 Farm Land and Crop Land in the Study Area

In terms of total land area, the study area has just under 2.5 million acres which represents 35% of the total land area in Eastern Ontario. Frontenac County accounts for the largest share of land area in the study area with 38% or 943,868 acres. Lennox and Addington follows with 28% while Leeds accounts for 22% and Grenville 12% (Table 10).

With respect to farm land, in 1996 the study area accounted for 30% of the total farm land area in the Eastern Ontario region. Farm land made up 30% of the total land area *within* the study area in 1996. While there was virtually no increase in farm land between 1991 and 1996 at the regional level (Eastern Ontario), the farm land acreage in the study area increased by 3% (Table 10). Ontario experienced a similar rate of growth during the same period. Of the four counties, Leeds had the largest share of its total land area in farm land at 43.4% followed by Grenville with 36.2%, Lennox and Addington with 29.8% and Frontenac with 22.9% (Table 10). The lower figures associated with Lennox and Addington and Frontenac, can be linked to the presence of the Canadian Shield in the northern portion of the study area.

Not all of the counties in the study area experienced an increase in farm land acreage. The amount of farm land in Grenville County declined between 1991 and 1996 by 11% with a loss of 13,000 acres. The majority of this loss occurred in Augusta township with a loss of 8,274 acres. A substantial decline in farm land acreage was also reported in the northern portion of Lennox and Addington County. At least three townships in every county experienced a decline in farm land acreage. Appendix G provides additional details at the township level.

Table 9. Total Number of Farms, Total Farm Land Area, and Average Farm Size for Frontenac, Leeds, Grenville, Lennox and Addington, the Study Area, Eastern Ontario and Ontario, 1991 - 1996. ^a

	1991	1996	% change	1991	1996	% change	1991	1996
	Total # of farms			Total farmland (acres)			Average farm size (acres)	
Frontenac County	733	823	12.28%	203967	216653	6.22%	278.26	263.25
Leeds County	856	904	5.61%	223364	235494	5.43%	260.94	260.50
Grenville County	636	589	-7.39%	120096	106946	-10.95%	188.83	181.57
Lennox and Addington County	726	753	3.72%	198449	209434	5.54%	273.35	278.13
Study Area	2951	3069	4.00%	745876	768527	3.04%	252.75	250.42
Eastern Ontario	10655	10473	-1.71%	2480000	2500799	0.84%	232.75	238.79
Ontario	68633	67520	-1.62%	13470653	13879565	3.04%	196.27	205.56

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source:1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Table 10. Total Land Area, Farm Land Area as a Percentage of Total Land Area, Land Area in Crops, Percentage of Farm Land in Crops, Crop Land Area as a Percentage of Total Land Area for Frontenac, Leeds, Grenville, Lennox and Addington, the Study Area, Eastern Ontario and Ontario, 1991 - 1996. ^a

	Total land area (acres)	Farm land area as % of total land area, '96	1991 Land in crops (acres)	1996	% change	1991 % of farmland in crops	1996	Crop land area as % of total land area, '96
Frontenac County	943868	22.95%	72302	75800	4.84%	35.45%	34.99%	8.03%
Leeds County	542323	43.42%	85781	90659	5.69%	38.40%	38.50%	16.72%
Grenville County	295414	36.20%	54429	49322	-9.38%	45.32%	46.12%	16.70%
Lennox and Addington County	701952	29.84%	84178	86989	3.34%	42.42%	41.54%	12.39%
Study Area	2483557	30.94%	296690	302770	2.05%	39.78%	39.40%	12.19%
Eastern Ontario	7122123	35.11%	1183028	1227219	3.74%	47.70%	49.07%	17.23%
Ontario	226529830	6.13%	8430414	8759707	3.91%	62.58%	63.11%	3.87%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source:1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Compared to the Eastern Ontario region and the province of Ontario, the study area has a smaller proportion of its total farm land base in crops, again a factor of the local soil resources. In 1996, the province had 62.6% of its total farm land in crops while Eastern Ontario had 47.7% of its farm land in crops. In the same year, the study area had only 39.8% of its total farm land in crops.

As noted in Section 2, the study area experienced an overall decline in crop land area between 1981 and 1996. However, in recent years the study area has experienced an increase in crop land acreage which is a reflection of the general trend across the province and in the Eastern Ontario region (Table 10). Between 1991 and 1996 crop land in the study area increased by 2% (6,000 acres). Furthermore, while a decline in crop land area continued to be a feature of the northern parts of both Frontenac and Lennox and Addington, these losses were minimal (-200 acres). In contrast, the amount of crop land in Grenville County decreased by over 5,000 acres between 1991 and 1996. Although Grenville was the only county in the study area to experience a decline in crop land between 1991 and 1996, it maintained its position as the leading county in the study area in terms of having the largest share of its total farm land area in crop land (46%) in 1996 (Table 10).

Townships in the study area with 50% or more of their total farm land in crops in 1996 include South Gower, Edwardsburgh, Wolfe Island, Amherst Island, and Adolphustown. South Fredericksburgh was the leading township in this respect with 67% of its total farm land reported as crop land. In interpreting the data it is important to recognize that there is considerable variation in township size across the study area. Indeed, the township of Camden East in Lennox and Addington reported 23,000 acres of crop land in 1996 (39% of its total farm land area) while Amherst Island, Adolphustown and South Gower had a combined total of less than 15,000 acres of crop land. Appendix H provides additional details on the variation in crop land area between the counties at the township level.

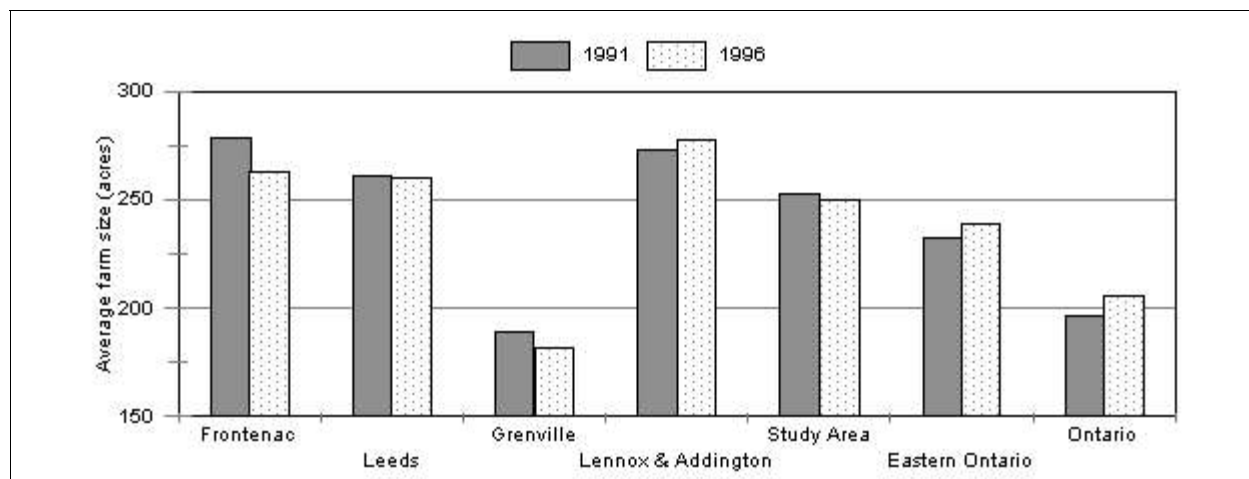
3.4.3 Farm Size

Between 1991 and 1996, the average farm size in the study area declined slightly from 252.7 acres to 250.4 acres (Table 9). During the same period, farms across Eastern Ontario and the province of Ontario experienced an increase in average size.

Despite the decline in average farm size, farms in the study area were on average, about 45 acres larger than the provincial average (205.6 acres per farm) and 12 acres larger than the regional average (238.8 acres per farm).

Frontenac County recorded the largest average farm size at 278 acres and was the only county in the study area to experience an overall increase in average farm size between 1991 and 1996. Farms located in Grenville County were the smallest in the study

area, averaging 181.6 acres per farm (Figure 24). Average farm size in Grenville is likely influenced by the large number of specialty farms in the region (108 farms or 23.7% of all farms in the county - Appendix P) which are typically operated on a small land base. Additional details at the township level are provided in Appendix G.



^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

In summary, Lennox and Addington was the only county to record an increase in average farm size, remaining consistent with trends in Eastern Ontario and the province. Overall, the majority of farms in the study area were under 180 acres in size in 1996.

Figure 24. Average Farm Size ^a, 1991 and 1996.

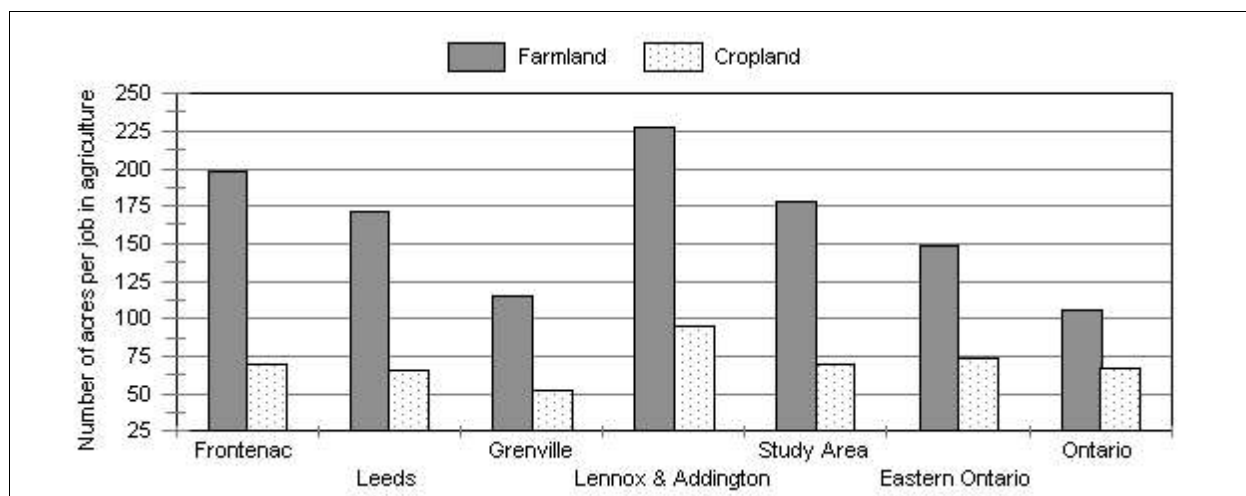
3.4.4 Agriculture and Labour Intensity

A measurement of farm labour intensity can be obtained by dividing total agriculture job numbers into total land area figures. Accordingly, we estimate that in 1996, one worker was employed in agriculture for every 177.7 acres of farm land in the study area. Figures calculated for the Eastern Ontario region and Ontario suggest that farming in the study area is less labour intensive (ie. on average, fewer agricultural workers are required to farm a given area of land in the study area versus the labor requirements associated with agriculture in Eastern Ontario and Ontario). In Eastern Ontario, one worker was employed for every 148.7 acres of farmland while the province as a whole required one agriculture worker for every 105.9 acres (Figure 25).

Grenville County stands apart from the other three counties in that agriculture production appears to be more labour intensive with its labour needs actually increasing between 1991 and 1996. This may be explained in part by the high proportion of

miscellaneous specialty type farms in the county.¹⁵ The additional labour needs may also be linked to the high proportion of fruit farms in the county relative to the other counties. In general, the study area is following the pattern of capital intensification being experienced across Eastern Ontario and the province. Details at the township level are provided in Appendix I.

Figure 25. Number of Acres of Farmland & Crop Land per Job in Agriculture, 1996.^a



^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1996 Statistics Canada. Agricultural Profile of Ontario.

Table 11. Number of Jobs in Agriculture and Number of Acres of Farm Land and Crop Land per Job in Agriculture, 1991 and 1996.^a

	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change
	Number of jobs in agriculture			Number of acres of farm land per job in agriculture			Number of acres of crop land per job in agriculture		
Frontenac County	1070	1090	1.87%	190.62	198.76	4.27%	67.57	69.54	2.91%
Leeds County	1480	1380	-6.76%	150.92	170.65	13.07%	57.96	65.69	13.35%
Grenville County	875	935	6.86%	137.25	114.38	-16.66%	62.20	52.75	-15.20%
Lennox and Addington County	970	920	-5.15%	204.59	227.65	11.27%	86.78	94.55	8.96%
Study Area	4395	4325	-1.59%	169.71	177.69	4.70%	67.51	70.00	3.70%
Eastern Ontario	17630	16810	-4.65%	140.67	148.77	5.76%	67.10	73.01	8.80%
Ontario	139880	131060	-6.31%	96.30	105.90	9.97%	60.27	66.84	10.90%

¹⁵ Miscellaneous specialty includes greenhouse flower and plant production, bulbs, shrubs, trees, sod, ornamentals, mushroom houses, honey production, maple syrup production, etc.

^a Based on farms reporting farm gate sales of \$2,500 or more
Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part 1. ; 1996 Statistics Canada.
Agricultural Profile of Ontario.

3.4.5 Farm Types

Agriculture in the study area is characterized by a variety of production activities. As detailed earlier in section 2.6, the most prominent types¹⁶ of farming activities in terms of farm numbers are beef, dairy, miscellaneous specialty and field crop farms.

Compared to the Eastern Ontario region, the study area has a smaller proportion of dairy farms and a larger proportion of beef farms (Figure 26 & Table 12). With respect to the other livestock sectors, hog farms and poultry farms are small in number with each type accounting for less than 1% of the total farms in the area. The limited presence of hog and poultry farms in the study area is fairly consistent with the pattern at the regional and provincial level and is reflective of the high-intensity production that now characterizes these two sectors (ie. large numbers of livestock units per farm). As noted in section 2.7, it appears as though the presence of intensive farming operations is having a substantial impact on elevating average farm gate receipt values in several areas of the study area.

Over the past twenty years, field crop farms have steadily increased in number while grain and oilseed type farms have declined. Miscellaneous specialty farms¹⁷ have also experienced a substantial increase in recent years and in 1996 the study area had a slightly higher proportion of these farm types than either the Eastern Ontario region or the province of Ontario (Figure 26 & Table 12). Between 1986 and 1996, the number of miscellaneous specialty type farms more than doubled in each of the counties in the study area. Additional details on farm types and change in farm types at the county level is provided in Appendix P.

¹⁶ Each census farm is classified according to the predominant commodity produced. Statistics Canada does this by estimating the potential receipts from the inventories of crops and livestock reported on the questionnaire. The commodity or group of commodities that accounts for 51% or more of the total potential receipts determines the farm type. For example, a census farm with total potential receipts of 60% from dairy, 20% from hogs and 20% from field crops, would be classified as a dairy farm. Where there is no single major commodity associated with the farm operation (ie. 45% dairy, 45% hogs and 10% field crops; 40% grains and oilseeds, 35%, hogs, 25% maple syrup), the farm is categorized as either a 'livestock combination' or 'other combination' operation.

¹⁷ Miscellaneous specialty includes greenhouse flower and plant production, bulbs, shrubs, trees, sod, ornamentals, mushroom houses, honey production, maple syrup production, etc. Appendix R provides additional details on several specialty farm types in the study area.

There are relatively few fruit and vegetable type farms in the study area reflecting the centralization of the industry in other parts of the province where soil and climate conditions afford greater production opportunities.

The distribution of farm types across the study area is not homogenous. In terms of farm numbers, beef and dairy type operations rank 1st and 2nd in Frontenac, Leeds, and Lennox and Addington. In Grenville however, beef farms rank 1st but miscellaneous specialty farms rank 2nd with dairy farms ranking 3rd.

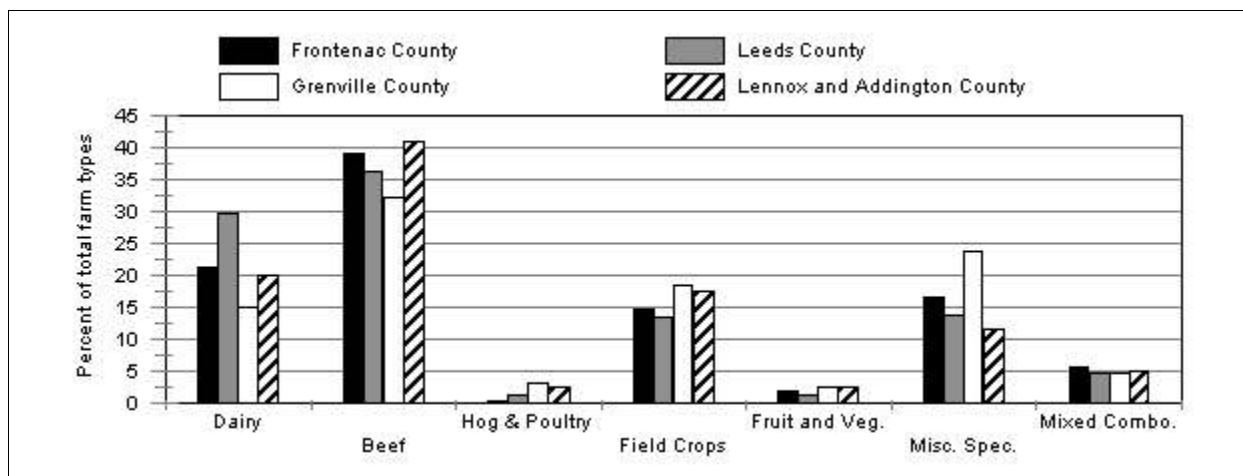
With respect to poultry farms, Lennox and Addington County has almost as many farms as the other three counties combined. Of the nineteen hog farms reported in the study area, the majority are located in Grenville County (8 farms) and Leeds County (6 farms).

Grain and oilseed farms are primarily located in Grenville, Leeds, and Lennox and Addington while field crop farms appear to be more evenly distributed between the four counties. Fruit and vegetable farms do not appear to be concentrated in any single county within the study area.

In summary, total farm numbers in the study area have shown an increase over the past three census periods. Between 1986 and 1996 there was a 2.5% increase in farm numbers in the study area (+61 farms) compared to a 2.4% decrease in the Eastern Ontario region (-240 farms) and a 5% decrease across the province of Ontario (-3,366 farms) (Table 12). The slight increase in farm numbers has been accompanied by a shift in farm types in the study area. While dairy and beef farm numbers have declined,¹⁸ the diversity of the local agriculture sector has been enhanced in recent years with the growth of miscellaneous specialty type farming enterprises.

¹⁸ Caution needs to be exercised when interpreting the decline in farm numbers for any given sector. The rate of decline in farm numbers between two periods may not produce a corresponding decline in total production for a given commodity. In examining the dairy sector, we find that milk production levels can be maintained or even increased in a region as a result of increased herd size, and efficiencies gained through improved feed rations, improved herd health and genetic selection. Looking at the study area, we find that the number of dairy farms in the study area declined by 17% between 1991 and 1996, while total dairy cow numbers in the study area declined by only 11.6% and total milk production declined by just 7.7%. The size of the average milking herd in the study area increased from 41.6 cows to 45 cows between 1991 and 1996, while average production per cow in the study area increased 4.4% during the same period (Statistics Canada. Agricultural Profile of Ontario. Part 1, 1991.; Statistics Canada. Agricultural Profile of Ontario, 1996.; Dairy Farmers of Ontario).

Figure 26. Farm Types ^a as a Percentage of Total Farms ^b in the Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, 1996.



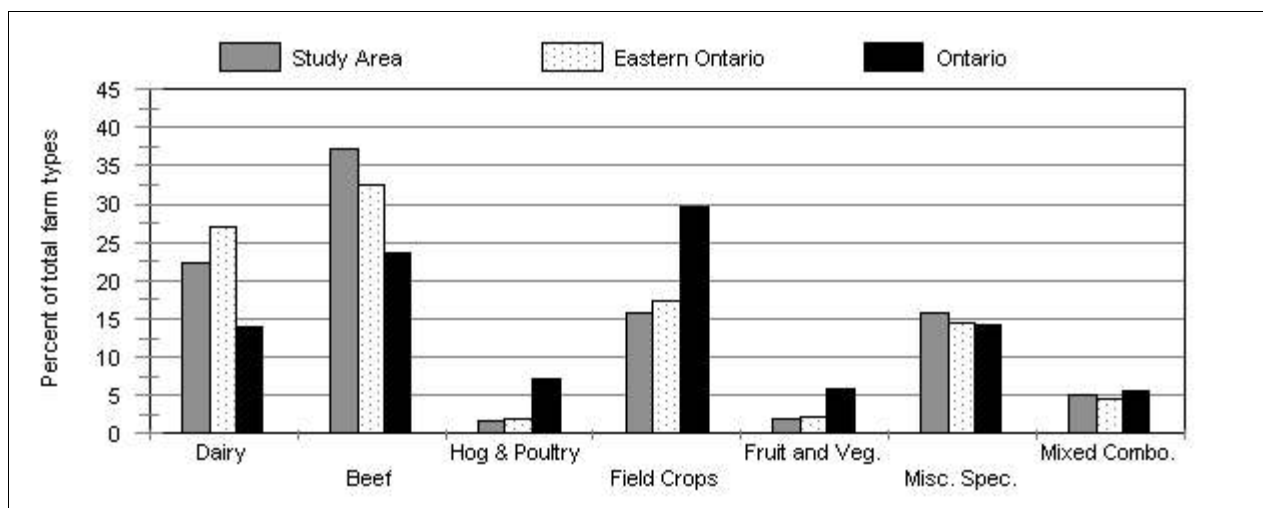
^a Field crops includes wheat, grain and oilseed crops, and field crops.

Mixed combination includes livestock combination and other combination.

^b Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1996 Statistics Canada. Agricultural Profile of Ontario.

Figure 27. Farm Types ^a as a Percentage of Total Farms ^b for the Study Area,



^a Field crops includes wheat, grain and oilseed crops, and field crops.

Mixed combination includes livestock combination and other combination.

^b Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1996 Statistics Canada. Agricultural Profile of Ontario.

Eastern Ontario and Ontario, 1996.

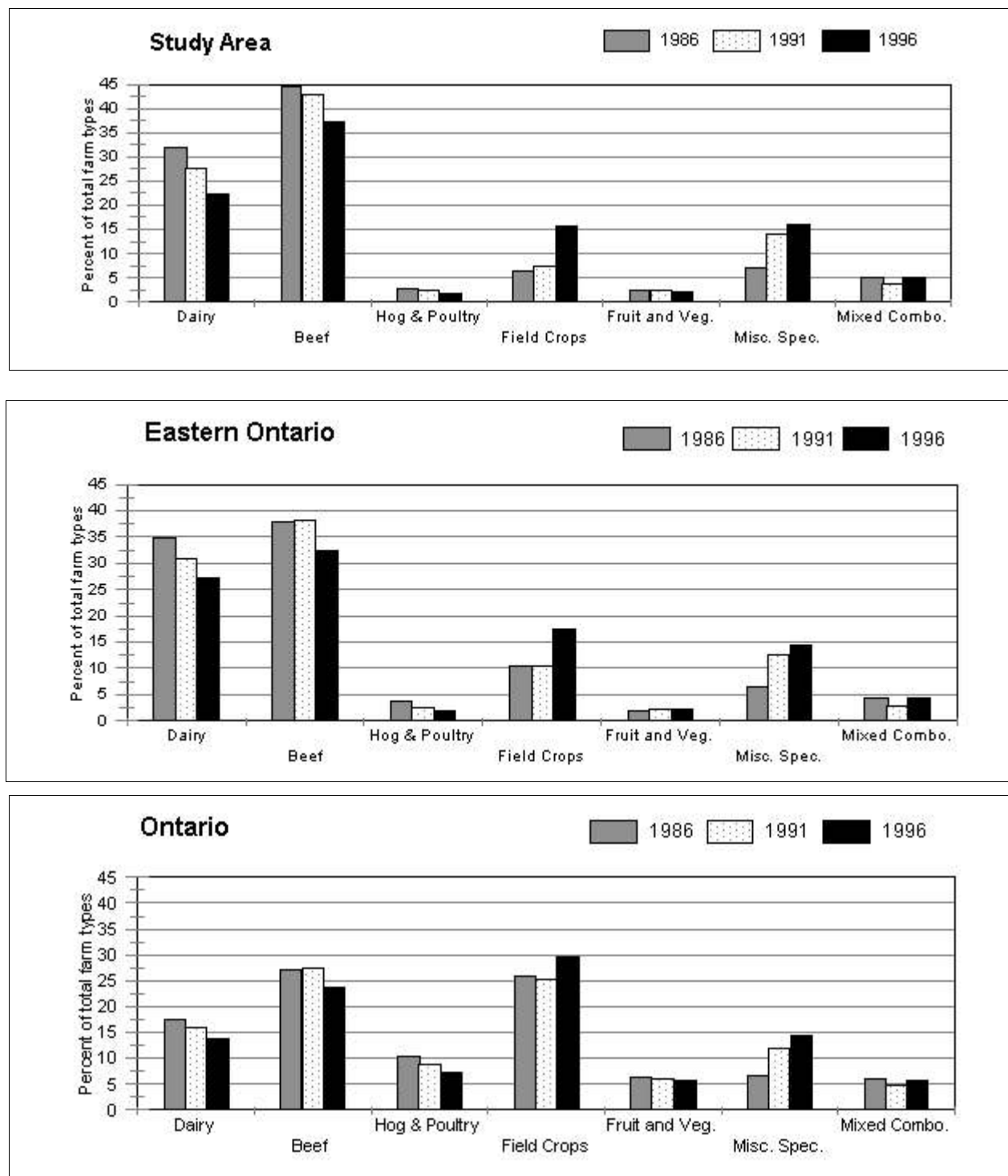


Figure 28. Farm Types ^a as a Percentage of Total Farms in Study Area, Eastern Ontario and Ontario for 1986, 1991 and 1996.

^a Field Crops includes combination of wheat, grain and oilseed, and field crop farm types.

Source: 1986, 1991 and 1996 Statistics Canada. Agricultural Profile of Ontario.

Table 12. Number of Farms ^a by Major Products ^b for the Study Area, the Eastern Ontario Region and Ontario, 1986, 1991 and 1996 with Percent Change for 1986-1991, 1991-1996 and 1986-1996.

1986	Total # of farms	Dairy	Beef	Hog	Poultry & Egg	Wheat	Grain & oilseed	Field crops	Fruit	Veg.	Misc. Spec.	Livestock combo.	Other combo.
Study Area	2398	763	1071	42	27	10	131	14	27	28	166	29	91
% of farms in the study area	100%	31.82%	44.66%	1.75%	1.13%	0.42%	5.46%	0.58%	1.13%	1.17%	6.92%	1.21%	3.79%
Eastern Ontario	8970	3122	3411	208	132	63	823	50	90	96	586	91	298
% of farms in Eastern Ontario	100%	34.80%	38.03%	2.32%	1.47%	0.70%	9.18%	0.56%	1.00%	1.07%	6.53%	1.01%	3.32%
Ontario	63253	11028	17160	4840	1643	733	13693	1988	2298	1791	4203	1653	2223
% of farms in Ontario	100%	17.43%	27.13%	7.65%	2.60%	1.16%	21.65%	3.14%	3.63%	2.83%	6.64%	2.61%	3.51%
1991													
Study Area	2447	674	1047	34	21	4	62	115	23	36	343	57	31
% of farms	100%	27.54%	42.79%	1.39%	0.86%	0.16%	2.53%	4.70%	0.94%	1.47%	14.02%	2.33%	1.27%
Eastern Ontario Region	9001	2780	3440	134	93	14	517	414	98	109	1133	168	101
% of farms	100%	30.89%	38.22%	1.49%	1.03%	0.16%	5.74%	4.60%	1.09%	1.21%	12.59%	1.87%	1.12%
Ontario	61432	9757	16855	3827	1583	529	11433	3535	2107	1639	7312	1921	934
% of farms	100%	15.88%	27.44%	6.23%	2.58%	0.86%	18.61%	5.75%	3.43%	2.67%	11.90%	3.13%	1.52%
1996													
Study Area	2459	550	917	19	24	1	78	307	26	23	390	64	60
% of farms	100%	22.37%	37.29%	0.77%	0.98%	0.04%	3.17%	12.48%	1.06%	0.94%	15.86%	2.60%	2.44%
% change '86 - '91	2.04%	-11.66%	-2.24%	-19.05%	-22.22%	-60.00%	-52.67%	721.43%	-14.81%	28.57%	106.63%	96.55%	-65.93%
% change '91 - '96	0.49%	-18.40%	-12.42%	-44.12%	14.29%	-75.00%	25.81%	166.96%	13.04%	-36.11%	13.70%	12.28%	93.55%
% change '86 - '96	2.54%	-27.92%	-14.38%	-54.76%	-11.11%	-90.00%	-40.46%	2092.86%	-3.70%	-17.86%	134.94%	120.69%	-34.07%
Eastern Ontario Region	8730	2370	2828	78	102	12	599	901	95	98	1257	198	192
% of farms	100%	27.15%	32.39%	0.89%	1.17%	0.14%	6.86%	10.32%	1.09%	1.12%	14.40%	2.27%	2.20%
% change '86 - '91	0.35%	-10.95%	0.85%	-35.58%	-29.55%	-77.78%	-37.18%	728.00%	8.89%	13.54%	93.34%	84.62%	-66.11%
% change '91 - '96	-3.01%	-14.75%	-17.79%	-41.79%	9.68%	-14.29%	15.86%	117.63%	-3.06%	-10.09%	10.94%	17.86%	90.10%
% change '86 - '96	-2.68%	-24.09%	-17.09%	-62.50%	-22.73%	-80.95%	-27.22%	1702.00%	5.56%	2.08%	114.51%	117.58%	-35.57%
Ontario	59887	8320	14172	2677	1686	466	12250	4965	2016	1428	8547	2030	1330
% of farms	100%	13.89%	23.66%	4.47%	2.82%	0.78%	20.46%	8.29%	3.37%	2.38%	14.27%	3.39%	2.22%
% change '86 - '91	-2.88%	-11.53%	-1.78%	-20.93%	-3.65%	-27.83%	-16.50%	77.82%	-8.31%	-8.49%	73.97%	16.21%	-57.98%
% change '91 - '96	-2.51%	-14.73%	-15.92%	-30.05%	6.51%	-11.91%	7.15%	40.45%	-4.32%	-12.87%	16.89%	5.67%	42.40%
% change '86 - '96	-5.32%	-24.56%	-17.41%	-44.69%	2.62%	-36.43%	-10.54%	149.75%	-12.27%	-20.27%	103.35%	22.81%	-40.17%

^a Farm numbers are based on farms reporting farm gate sales of \$2,500 or more. This classification is used to omit small hobby farms that might have skewed the results.

^b Poultry and Egg include broilers, pullets and pullet chicks. Grain and oilseed include oats, barley, mixed grain, grain corn, rye, canola, soybeans and sunflower. Field crops include alfalfa and alfalfa mixtures, corn and sorghum for silage, field peas, tobacco, etc. Miscellaneous specialty includes cut flowers, bulbs, shrubs, trees, sod, ornamentals, etc. Livestock combination refers to two types of livestock or more, ie. poultry & beef, dairy & swine.

Source: 1986 Statistics Canada. Agriculture, Ontario. ; 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

3.4.6 Farm Gate Sales ¹⁹ and Farm Productivity

¹⁹ Statistics Canada data on gross farm receipts (farm gate sales), although collected in 1991 and 1996, reflect total gross farm receipts associated with 1990 and 1995 respectively.

4.0 Economic Impact Analysis: An Overview

Economic impact analysis studies are aimed at identifying “...changes in a local economy resulting from a stimulus (positive or negative) to a particular segment of the economy’ (Davis, 1990, p.5). These studies are often based on one of several standard methodologies of regional analysis: economic base analysis and input-output analysis (Faas, 1980, p.4). Economic impact is generally a measure of the impact of a sector or a project on all sectors of the economy. In this study, total economic impact refers to the sum of direct, indirect, and induced impacts. Direct impacts in terms of employment and sales were measured in Section 3.3 and 3.4.6 respectively. The indirect and induced impacts of agriculture will be examined in the following sections of the report.

4.1 Input-Output Analysis

Input-Output (IO) analysis is used to measure the inter-relationships between economic activities at the sectoral, national and regional levels. Linkages are expressed by estimating the sales (outputs) from a given sector to all other sectors in the economy, and by estimating the inputs from all other sectors to a specific sector. What makes the I-O model so useful is the comprehensiveness of the model which disaggregates the economy into individual sectors (Josling, 1966, p.5). Disaggregation permits analysis at the sectoral level, providing researchers with a close-up view of the economy. This analysis allows the researcher to assess where each sector purchases its inputs and sells its outputs. Such analysis is invaluable in identifying what investment will provide the greatest impact on an economy (Poole et al., 1994, p.30).

The I-O model estimates the movement of expenditures through the economy. This is traced through four different levels of expenditure: intermediate and primary suppliers, and intermediate and primary purchasers (Bendavid-Val, 1991, p.88). Suppliers - intermediate and primary - purchase inputs for processing into outputs. Purchasers - intermediate and primary - buy outputs from suppliers and either use them to manufacture a product, or sell them as a final product (Bendavid-Val, 1991, p.88).

Input-Output analysis has two main approaches. One allows the estimation of only the direct and indirect effects of a sector. The other estimates these, as well as the induced effects of a sector. The ‘open’ model is used to trace the flow of variables between sectors of the economy (i.e. direct and indirect expenditures). The open model does not measure induced spending in the economy; meaning expenditures by employees on food, services and other household expenses (Davis, 1990, p.59). The ‘closed’ model is used to measure all aspects of the economy; including the direct, indirect and induced effects. Treating the household sector as a producer that sells labour to other purchasing sectors, assesses induced effects (Davis, 1990, p.59).

There are several problems associated with the I-O model. The first is that it is

time-specific. In other words, it takes a snapshot of the economy at a point in time . This model cannot account for changes in product demand or input costs, or for the introduction of new technology into the industrial sector (Davis, 1990, p.62). Thus, the I-O model does not adjust for the changing nature of the economy. A second problem of the I-O model is the cost and time needed for the construction of the tables associated with this analysis. Thirdly, input-output analysis requires accurate estimates of movements across borders. This data is typically only available at the provincial or national level. For this reason, the analysis for this study has been carried out using a survey based “input-output-like” approach.

4.2 Economic Base Approach

Economic base theory maintains that economic growth is only possible if the economy's exports grow (Bradfield, 1988, p.38). The theory is based on the belief that as exporting industries expand their sales, there will be an increasing demand for inputs locally which will consequently drive local economic growth (Bradfield , 1988, p.39). In economic base theory, the economy is classified into two sectors of basic and non-basic. The non-basic sector is economic activity with the final sales remaining inside the region (Davis, 1990, p.10). These are support industries that provide everything from industrial inputs to houses for basic sector employees (Higgins and Savoie, 1995, p.66). The exporting industries are identified as basic sectors while all other industries are classified as non-basic.

According to economic base theory, exports are the engine of the local economy. It follows then, that the export of goods supports all other aspects of the economy (Bendavid-Val, 1991, p.77). Export base theory and its supporters carry the separation of basic and non-basic sectors to the point where they attempt to predict the relative impact of the basic sector on the non-basic sector. The prediction of economic impact is assessed through two economic indicators known as the economic base ratio and economic base multiplier. Economic base theory has been refined to the point where it can be questioned: “[W]hat is the overall gain in employment or income in the region associated with each gain in export sales?” (Bendavid-Val, 1991, p.78).

The question is answered through the economic base ratio indicator and the base multiplier indicator (Bendavid-Val, 1991, p.78). The economic base ratio calculates jobs that are theoretically created from one additional job in the basic sector. The economic base ratio is the ratio between employment in the basic and non-basic sectors and is supported by the idea that the combination of basic employment and non-basic employment equals total employment (Bendavid-Val, 1991, p.78). The economic base multiplier is the ratio of total employment to basic employment and indicates how many jobs in total are provided for each basic job. Thus, the economic base multiplier is the total sum of the jobs created in both sectors from one job in the basic sector (Bendavid-Val, 1991, p.78). The economic base method is used in this study to estimate jobs in the

service sector related to agriculture.

4.3 Multipliers

Given the previous discussion of the input-output analysis and economic base analysis, the reader may question where the application of the two models leads. One of the best uses is that they allow the analyst to identify the impacts of economic changes or shocks to a system. Essentially, these models measure the multiplier effects that result from a change in an economic system. In short, multiplier effects are the summation of the direct, indirect and induced impacts of economic activity presented in a single number (Lewis et al., 1979, p.1). Therefore, an economic multiplier can be used to estimate the impact of change in one variable (for example, the value of agriculture production) on another variable (for example, the value of non-agriculture production). Direct employment and production in the agriculture sector will affect the rest of the economy by supporting employment in related industries as well as in the retail sector. In this way, "... a multiplication of transactions occurs in the economy by people re-spending money" (Van Hoes, 1995, p.66). The multipliers calculated for this research include a sales expenditure multiplier and an employment multiplier.

5.0 Frontenac, Leeds and Grenville, Lennox and Addington Study Methodology

Initial research for the study area was carried out from January to March 2000. The economic impact of agriculture in the county was measured through an accounting of the total sales and employment of agriculture and agriculture related businesses in the study area. This work involved a review of the primary data from Statistics Canada's 1996 Population Census of Canada and 1996 Agriculture Census to study the direct economic impacts of agriculture on the economy of the study area. A survey-based 'input-output-like' approach was used to measure the indirect impacts. The survey was aimed at businesses that sell products to, or buy products from, the farmer. The induced economic and employment impacts of the agriculture sector were also studied using primary data derived from the Statistics Canada census data.

5.1 Direct Impact Methodology

Data were taken from the 1996 Population Census of Canada and the 1996 Agriculture Census and yielded information on the economy of the study area and the individual counties that make up the study area. Where appropriate, data from earlier censuses were incorporated to examine long-term trends in employment and sales in the county. This information has been presented in Section 2.0 which features a mapping component showing spatial and temporal aspects of agriculture, and Section 3.0 which offers additional commentary on the similarities and differences that exist between the

study area, the Eastern Ontario Region and the province of Ontario. For the purposes of this study, 'direct impacts' are the jobs and sales generated 'on the farm': farm gate sales and farm jobs.

5.2 Indirect Impact Methodology

For the purposes of this study, indirect impacts are jobs and sales generated 'off the farm' by businesses which interact with farm operations through buying and selling products and services. It should be noted that 'related to agriculture' includes only those businesses that buy from or sell to the farm business or agri-related business; sales to farm families for personal consumption are excluded from the indirect impact, but are included later in the analysis under 'induced impacts'.

The research method used to measure the indirect impacts was a survey-based 'input-output' approach. This was completed through a telephone survey conducted from January to April 2000. The method and survey format was originally developed for use in a similar study in Huron County in 1996 (Cummings, Morris and McLennan, 1998), and revised through successive agri-impact studies completed in Prescott, Russell, Stormont, Dundas and Glengarry Counties in eastern Ontario in 1998 (Cummings and Deschamps, 1999), Simcoe County in 1999 (Cummings and Associates, 1999) Lambton County in 1999 (Cummings and Associates, 2000), and Perth County in 1999 (Cummings and Associates, 2000). The method was designed to identify the value of gross sales and the jobs produced by a sample of businesses related to agriculture. From this sample, an estimate was produced for the total population of agri-related businesses in the study area. This in turn provided an estimate of the economic impact of these agri-related businesses in the study area through indirect employment and sales.

5.2.1 Development of the Business Inventory and Survey Sample

The survey was based on a random sample of local agri-related businesses. A list of agri-related businesses was developed by collecting lists from a number of sources in the area: representatives with local Federation of Agriculture affiliates, Municipal Offices, Chambers of Commerce, Economic Development Offices, and the Yellow pages. The original list of 968 businesses was pared down to 898 by eliminating businesses that were either out of business, double listed, located outside of the study area or likely had no connection to agriculture (e.g. beauty salons/barber shops).

In order to attain a 95% confidence level for the 898 businesses in the inventory, a sample size of 270 businesses was selected at random from the adjusted inventory. As 56

of the first 198 contacts were businesses with no ties to agriculture,²³ it was determined that 28.3% of the businesses in the adjusted inventory had no connections to agriculture. The inventory was adjusted accordingly (Table 17), to reach a final estimate of 644 total agri-related businesses in the study area, with a sample size of 241 required for a 95% confidence level. In total, 275 businesses were surveyed; all 275 businesses in the survey provided data regarding employment while 241 provided sales data.

Table 17 Number of Agri-related Businesses in the Study Area

County and Study Area	# in original inventory	# in 1 st 198	Non-agri in 1 st 198	% Non-agri	- Non-agri	# in revised inventory
Frontenac	189	46	12	26.1%	49	140
Lennox & Addington	310	60	17	28.3%	88	222
Leeds	272	60	16	26.7%	73	199
Grenville	127	32	11	34.3%	44	83
Study Area	898	198	56	28.3%	254	644

Source: 2000 Agri-business Survey

During the course of the telephone survey, respondents were asked to provide information regarding the total value of sales and employment figures for their business. They were also asked to estimate the percentage of sales related to the agriculture sector (refer to the questionnaire in Appendix S).

5.2.2 Total Gross Sales for the Businesses Surveyed

Total gross sales for the businesses surveyed include sales related and unrelated to the agriculture sector. The sample included agri-related businesses that sell to and buy products from agriculture, but they may also sell to, and buy from other sectors of the economy. For the 241 businesses surveyed, \$348,570,000 in gross sales were reported (Table 18).

5.2.3 Agriculture-related Sales for the Businesses Surveyed

As part of the telephone survey, respondents were asked to estimate the

²³ A number of companies offering contracting services such as electrical, plumbing, heating work, indicated that their business activities were in no way related to agriculture. Their focus was exclusively on residential buildings in urban centres. Several of the contractors noted that agri-related work once constituted a portion of their trade, but this activity has “dried up” in recent years. The survey also found that a number of veterinary clinics in the study area have changed their orientation from large animal practices to small ‘companion’ animal practices. Several law firms indicated that they did not have linkages with the agriculture sector. One of the trucking firms contacted in the sample, indicated that their activity was not related to agriculture.

percentage of their sales that were related to agriculture, either by providing products and/or services to farm businesses, or by purchasing products of agricultural origin. The survey determined that \$131,697,965, or 37.8% of total gross sales from the businesses surveyed, were related to agriculture. This percentage is similar to the findings for Simcoe County (39.7% of total sales related to agriculture), Huron County (40.2%) and the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (42.1%). Table 18 illustrates the agri-related sales for each of the four counties in the study area as well as the study area as a whole.

Table 18 Agriculture and Non Agri-related Sales for Businesses Surveyed

County and Study Area	# of Businesses Surveyed	Agri-related Sales	Sales Unrelated to Agriculture	Total Sales for Businesses Surveyed
Frontenac	56	\$22,254,225	\$50,162,775	\$72,417,000
Lennox & Addington	81	\$28,306,740	\$48,582,260	\$76,889,000
Leeds	65	\$40,268,000	\$66,481,000	\$106,749,000
Grenville	39	\$40,869,000	\$51,646,000	\$92,515,000
Study Area	241	\$131,697,965	\$216,872,035	\$348,570,000

Source: 2000 Ag-business Survey

The businesses were asked to estimate the percentage of agriculture sales made within the study area, within Ontario, within Canada (excluding Ontario) and outside of Canada. As shown in Table 19, the value of agri-related 'exports' beyond the borders of the study area represent 23.6% of the total agri-related sales for the surveyed businesses.

Table 19 Total Agriculture Sales and Location of Sales for the Businesses Surveyed

Sales for Surveyed Agri-related Businesses (n = 241)	Agri-related Sales	Percentage
Sales in the Study Area	\$100,559,393	76.4
Sales in Other Ontario Counties	\$26,985,572	20.5
Sales inside Canada (excluding Ontario)	\$937,500	0.7
Sales outside Canada	\$3,215,500	2.4
Total	\$131,697,965	100

Source: 2000 Ag-business Survey

5.2.4 Total Gross Sales for Study Areas' Agri-related Businesses

From the sample, we can estimate the total gross sales of all agri-related businesses in the study area. This includes sales both related and unrelated to agriculture. We have already established that there are approximately 644 agri-related businesses in the study area; a total of 241 of these provided sales data. This represents 37.4% of the total number of agri-related businesses ($241/644 \times 100$). By dividing the total estimated number of businesses (644) by the total number of businesses surveyed (241), a sampling multiplier of 2.67 can be used to calculate the total gross sales for all agri-related businesses in the four counties as a whole. Multipliers have also been calculated for each individual county within the study area.

Table 20 illustrates the estimated total gross sales for all agri-related businesses in each of the counties as well as for the study area as a whole, using the multipliers devised for each. These estimates were derived by applying the relevant sample multipliers to the total gross sales of the 241 businesses that provided sales data.

Table 20 Estimated Total Gross Sales for all Agri-related Businesses in the Study Area Using Sale Multipliers

County and Study Area	Total Sales for Businesses Surveyed	Sampling Multiplier	Total Estimated Sales for all Agri-Related Businesses
Frontenac	\$72,417,000	2.50	\$181,042,500
Lennox & Addington	\$76,889,000	2.74	\$210,675,860
Leeds	\$106,749,000	3.06	\$326,651,940
Grenville	\$92,515,000	2.13	\$197,056,950
Study Area	\$348,570,000	2.67	\$930,681,900

Source: 2000 Ag-business Survey

It should be noted that sales data from financial institutions, such as banks and credit unions, were collected somewhat differently. Typically, these sales would be based on profits generated from loans and services provided to farm businesses. However, this information is difficult to obtain. A conservative estimate is that revenue from farm businesses would at least cover the salaries of employees providing services to farmers. Therefore, for the purposes of this study, 'sales' by financial institutions were based on the number of employees at the institution multiplied by an average salary of \$30,000, a conservative estimate.

5.2.5 Agri-related Sales for all Agri-related Businesses in the Study Area

Total agri-related sales for the study area can be derived by using estimates of the

agri-related sales generated by the businesses surveyed. Using the same multipliers as presented in Table 19, estimates can be made for the agri-related sales of all agri-related businesses in each of the four counties as well as the study area as a whole. Table 21 illustrates these estimates, which were derived by applying the relevant sampling multipliers to the agri-related sales of the 241 businesses which provided sales data. In total, agri-related businesses located in the study area generated an estimated \$351.6 million in agri-related sales.

Table 21 Estimated Agri-related Sales for all Agri-related Businesses in the Study Area Using Sale Multipliers

County and Study Area	Total Agri-related Sales for Businesses Surveyed	Sampling Multiplier	Total Estimated Agri-related Sales for all Agri-related Businesses
Frontenac	\$22,254,225	2.50	\$55,635,562
Lennox & Addington	\$28,306,740	2.74	\$77,560,467
Leeds	\$40,268,000	3.06	\$123,220,080
Grenville	\$40,869,000	2.13	\$87,050,970
Study Area	\$131,697,965	2.67	\$351,633,567

Source: 2000 Ag-business Survey

5.2.6 Location of Total Agri-related Sales for All Agri-related Businesses in the Study Area

Using the study area multiplier of 2.67, we can provide an estimate of the total sales by location of the sale. Accordingly, \$268.5 million in total agri-related sales were generated within the study area. The total agri-related sales generated outside the study area, but remaining within Ontario amounted to \$72 million. The total agri-related sales generated outside of Ontario but within Canada, amounted to \$2.5 million. Finally, the total gross sales generated outside Canada amounted to \$8.6 million. These figures are provided in Table 22.

Table 22 Total Value of Agriculture Sales and Location of Sales for all Agri-related Businesses in the Study Area

Sales for All Agri-related Businesses in the Study Area (n = 241)	Agri-related Sales of Survey Sample	Sampling Multiplier	Agri-related Sales for all Study Area Agri-related Businesses
Sales in the Study Area	\$100,559,393	2.67	\$268,493,579
Sales in Other Ontario Counties	\$26,985,572	2.67	\$72,051,477
Sales inside Canada (excl. Ont.)	\$937,500	2.67	\$2,503,125
Sales outside Canada	\$3,215,500	2.67	\$8,585,385
Total	\$131,697,965		\$351,633,567

Source: 2000 Ag-business Survey

5.2.7 Number of Full-time Equivalent Employees Working at the Businesses Surveyed

The study separated employees of the agri-related businesses into two categories. The first category being that portion of the workforce that was active in providing goods and/or services for the agriculture sector and the second being the portion that was not active in serving the agriculture sector. For example, a veterinary clinic may have four veterinarians specializing in large animals (agri-related employees) and two veterinarians specializing in small 'companion' animals (unrelated to the agriculture sector). Data was collected on the total number of full-time, part-time and seasonal employees and hours of work at the agri-related business. These numbers were then converted to a figure representing the total number of Full Time Equivalent (FTE) jobs at that agri-related business based on a 1,875 hours per year workload (7.5 hours per day X 5 days per week X 50 weeks per year).

In total, 275 of the businesses surveyed provided employment data. The total number of employees at these businesses was 3,144, comprised of 2,457 full-time employees, 288 part-time employees, and 399 seasonal employees. Based on the hours and weeks worked over the course of a year, and using the FTE calculation as shown above, the estimate for the total number of FTE jobs at the businesses surveyed is 2,897. This total reflects all work activities (both agri-related and non agri-related) at the businesses surveyed. For the 275 businesses surveyed, 28.5%,²⁴ or 827 FTE jobs were related to agriculture. Table 23 summarizes the total and agri-related FTE jobs at the

²⁴ This figure (28.5%) differs from the figure of 37.8% associated with the sales data because the employment figure is derived from a total of 275 businesses whereas the sales figure is derived from 241 businesses.

businesses surveyed for each of the four counties as well as the study area as a whole.

Table 23 Total and Agri-related FTE Jobs at the Businesses Surveyed

County and Study Area	Number of businesses with job data	Total FTE Jobs	Percentage of Agri-related Jobs	Number of Agri-related FTE Jobs
Frontenac	63	608	33.2	202
Lennox & Addington	92	720	25	180
Leeds	77	869	23.6	205
Grenville	43	700	34.3	240
Study Area	275	2897	28.5	827

Source: 2000 Ag-business Survey

5.2.8 Number of Full-time Equivalent Employees Working in Agri-related Businesses in the Study Area

The total number of FTE jobs for all agri-related businesses in the study area, as well as the portion of FTE jobs that serve the agriculture sector can be derived from the sample. The number of respondents who provided employment data (275) was divided into the estimate of the total number of agri-related businesses in the study area (644), resulting in a multiplier of 2.34. From these values, the total number of FTE jobs for all agri-related businesses in the study area can be estimated at 6,779. Of these, the number of FTE jobs serving the agriculture sector can be estimated at 1,935. Table 24 illustrates the estimated total and agri-related FTE jobs using multipliers derived for each county, as well as for the study area as a whole.

Table 24 Estimated Total and Agri-related FTE Jobs Using Job Multipliers

County and Study Area	Sampling Multiplier (Jobs)	Total Estimated FTE Jobs	Estimated Agri-related FTE Jobs
Frontenac	2.22	1350	448
Lennox & Addington	2.41	1735	439
Leeds	2.58	2242	529
Grenville	1.9	1330	456
Study Area	2.34	6779	1935

Source: 2000 Ag-business Survey

5.3 Induced Impact Methodology

An examination of the induced effects of agriculture was conducted. Induced employment refers to jobs in Education, Health and Social Services and Government Service sectors. Population Census (1996) employment data from agriculture and manufacturing sectors were compared to service sector jobs in the three sectors mentioned above to estimate the number of induced jobs for the study area. Details of the induced impacts are presented in section 6.2.3

6.0 Results

6.1 Introduction to the Study Area Results

The aim of this chapter is to present the results of the study, including findings concerning the direct, indirect and induced impacts of agriculture and agri-related businesses on the economies of Frontenac, Lennox and Addington, Leeds and Grenville Counties. This chapter includes findings of an in-depth examination of the backward and forward linkages of agri-related businesses.

This research focuses on the economic impact of the agriculture sector and, more specifically, agri-related businesses in Frontenac, Lennox and Addington, and Leeds and Grenville Counties. Both primary and secondary data collection were undertaken; the primary research collection was an 'input-output-like' survey approach of agri-related businesses in the study area. Further calculations of the induced and direct impacts were completed, based on Population Census of Canada data and, to some extent, on multipliers from previous studies (Cummings et al., 1998). The final analysis of the data illustrates that the agriculture sector continues to be very important to the economies of Frontenac, Lennox and Addington, and Leeds and Grenville Counties.

The study aimed to identify the total economic impact of the agriculture sector in the four county area. While published data indicate that the agriculture sector generates substantial farm gate sales, there was no evidence to prove the actual impact of the agricultural sector. Similarly, published data indicates that direct employment in agriculture in 1996 has continued on a downward trend. In the first part of this report, the direct impact of agriculture was illustrated through a profile of the study area's industrial sectors (Section 3). However, this did not provide the full story of the economic impact of agriculture to the Counties of Frontenac, Lennox and Addington, and Leeds and Grenville. To provide a clearer picture of the indirect economic impact of the study area's agriculture sector, the input-output methodology was applied.

6.2 Direct, Indirect and Induced Impact Results

6.2.1 Estimated Direct Sales and Jobs

Direct impacts refer to the value of sales and number of jobs created by the agriculture sector in the study area. Direct sales are equivalent to the value of farm gate sales. In 1990, the value of farm gate sales in the study area amounted to \$171.5 million. This figure increased 6.9% in 1995 to \$183.3 million. The study area accounts for 23% of the total farm gate sales in the Eastern Ontario region and represents 2.3% of Ontario's

total farm gate sales. In 1991, the study area agriculture sector supported 4,395 jobs.²⁵ This number includes farm owners, operators and labourers. In 1996, this number fell by 1.6% to 4,325.

6.2.2 Estimated Indirect Sales and Jobs

The indirect impacts of agriculture refer to the value of sales and the number of jobs created by agriculture-related businesses in the four county study area. An agri-related business is defined here as any business which sells to, or buys from, the agriculture sector. The study found that the value of indirect impacts created by these businesses is substantial.

6.2.2.1 Location of Agri-related Businesses in the Survey

Agriculture-related businesses are located in rural areas, villages, towns and cities across the study area. Greater representation is found in and around Kingston, Brockville, Napanee, Gananoque and Kemptville. Other important centres for agri-related businesses were found in smaller communities such as Athens, Spencerville, Odessa, Prescott and Inverary.²⁶

Most of the agri-related businesses surveyed in the study area have only one business location (75%). Just over 18% of the businesses surveyed, have other outlets located inside the study area. Thus, a business in this category might have its head office in Kingston and an outlet in Kemptville. Eight percent of the businesses surveyed have outlets both inside and outside the study area.

6.2.2.2 Characteristics of the Businesses Surveyed

The common characteristic of all the businesses surveyed is that they deal in some way with the agriculture sector. More specifically, all of the businesses surveyed either sell products or services to, and/or buy products or services from agriculture producers. It is important to note that these agri-related businesses may also conduct trade with other sectors of the economy.

For the purposes of this study, the surveyed businesses were categorized according to their primary activity, using the Standard Industrial Classification code (SIC)

²⁵ Consists of full-time, part-time and seasonal jobs (not converted to full-time equivalents).

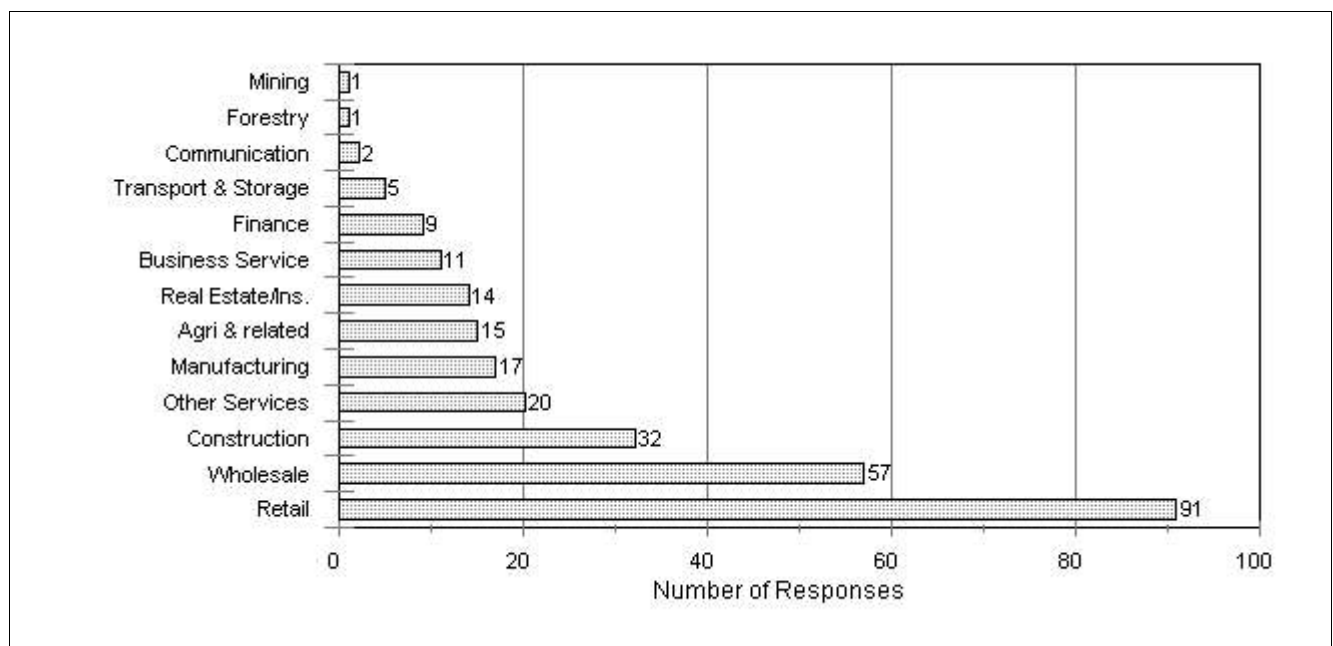
²⁶ Number of businesses by location for 275 businesses that provided employment figures: Napanee (51 businesses, 18.5% of 275 businesses surveyed), Kingston (31, 11.3%), Brockville (27, 9.8%), Kemptville (20, 7.3%), Gananoque (18, 6.5%), Prescott (10, 3.6%), Inverary (9, 3.3%), Athens (7, 2.5%), Odessa (6, 2.2%), Spencerville (5, 1.8%), Jasper (5, 1.8%), Lansdowne (5, 1.8%). The remaining 81 businesses (29.5%) were spread among 42 different communities in the study area.

as used by Statistics Canada. This classification system separates Canadian businesses into 18 divisions or sectors such as Manufacturing, Retail Trade, and Agriculture and Related Service Industries. Employment data for all 18 sectors in the study area for 1991 and 1996 were presented earlier in Table 7.

During the agri-related business survey, businesses from three industrial sectors (Education, Health and Social Services, and Government Services) were deliberately omitted from the survey as their impacts are being considered under induced impacts, leaving 15 possible sectors with which the study area's agri-related businesses could form links.

As illustrated in Figure 38, the study surveyed businesses in 13 different industrial sectors. This suggests that the agriculture sector has links with almost every sector of the study area economy. Connections were found with the following sectors: Retail Trade, Wholesale Trade, Construction, Other Services, Manufacturing, Real Estate and Insurance, Business Services, Finance, Transportation and Storage, Communication, Forestry, and Mining and Quarrying. Linkages were also found among businesses classified as Agriculture and Related Service Industries.

The survey did not include businesses from two sectors: Fishing and Trapping Industries and Accommodation, Food and Beverage Industries. This does not mean that these industries do not exist in the study area; they may not be directly linked to agriculture, or may not have had enough local representation to be picked up by the survey sample.



Source: 2000 Ag-business Survey

Figure 38 Business Response Rate by Industrial Sector

Some of the industries analyzed in the study have comparatively stronger linkages with the agriculture sector. Of the total 275 businesses surveyed, high representation of agri-related businesses are found in Retail Trade (91 of the businesses surveyed), Wholesale Trade (57), and Construction (32). There are also notable linkages with Other Services (20) and Manufacturing (17). Businesses within the Agriculture and Related Services sector also have strong linkages with agriculture (15 businesses surveyed). Characteristics of the businesses surveyed in various sectors of the study area economy are discussed below.

i) Agriculture and Related Service Industries

The study found that strong linkages exist between businesses within the agriculture sector. Most often, backward linkages are in the form of services provided to farms such as veterinary services, artificial insemination breeding services, custom farming services and crop consulting. In total, 15 businesses were interviewed from the Agriculture and Related Services Sector.

ii) Mining, Quarrying and Oil Well Industries

Only one business from this sector was surveyed which provided a backward link to agriculture through lime extraction and application.

iii) Forestry and Logging Industries

Only one business from this sector was surveyed which provided a tree removal and brush clearing service.

iv) Manufacturing Industries

A variety of products linked to the agriculture sector are manufactured by businesses in the study area. In total, 17 businesses from the sector were interviewed. Backward linkages to agriculture exist through the sale of such products as barn stabling, concrete, metal fencing materials and chemicals. A significant forward linkage involves the manufacturing/processing of food products from agricultural goods. As revealed in the survey, meat processing/packing and cheese production are two common types of forward linkages in the study area.

v) Construction Industries

Thirty-two businesses from the construction sector were surveyed. These businesses have backward linkages to agriculture through building construction, fence installation, electrical contracting, plumbing and heating contracting, concrete forming, well drilling and excavating.

vi) Communication and Other Utilities

Two businesses from this industrial sector were included in the survey. The

businesses have backward linkages with agriculture related to the provision of telephone services and electricity.

vii) *Transportation and Storage Industries*

A total of five businesses from the transportation and storage sector were included in the survey. These businesses provide trucking services for general freight, bulk liquids and dry materials. Typically, these would involve the transportation of livestock, raw milk, and various grain commodities. Grain elevators also come under this category and were included among the surveyed businesses.

viii) *Wholesale Trade Industries*

A number of wholesale dealers have established backward linkages with the agriculture sector through the sales of building materials, lumber, farm machinery, milk equipment, ventilation equipment, feed and crop inputs. Forward linkages are also present, primarily through the purchase of grain and seed for resale. A total of 57 businesses from the wholesale trade sector were surveyed.

ix) *Retail Trade Industries*

Businesses included in the retail trade sector are primarily engaged in buying products for resale to the general public for personal or household consumption, and in providing related services such as installation and repair. The businesses also sell products to farmers for farm use but are classified as retail since their main activity is selling products for personal use such as appliances, hardware stores and auto parts. The strongest backward linkages to the agriculture sector are automotive sales and service type businesses. These businesses sell and/or service farm vehicles and often carry a short line of farm equipment parts (tires, alternators, batteries, oil filters, air filters etc.). In total, 91 of the businesses surveyed were from the retail trade sector.

x) *Finance Industries*

A total of 9 financial service businesses were included in the survey. These businesses include banks, credit unions and other institutions which have backward linkages to agriculture through the provision of loans and banking services. In many instances, local branches have a separate department or specific agri-representative responsible for handling agriculture accounts.

xi) *Real Estate and Insurance Industries*

Real estate and insurance agencies have strong backward linkages to the agriculture sector. The main service provided to agriculture is the selling of agricultural property. These businesses are also involved in land appraisals and leasing farm properties. Insurance agencies offer an important agricultural input. The survey included 14 businesses from this industrial sector.

xii) *Business Service Industries*

Business service industries include accountants and lawyers that provide, respectively, financial accounting services such as general bookkeeping and tax preparation, and legal services particularly in relation to real estate transactions. The survey also included one land surveying business. All together there were 20 businesses from this sector in the survey.

xiii) *Other Service Industries*

According to Statistics Canada, 'other service industries' consist of four major business activity groups. These are: Amusement and Recreational service industries such as theatres, sporting events, casinos, and amusement parks; Personal and Household service industries such as hair salons, laundry facilities and funeral services; Membership Organization industries such as religious organizations, business organizations and professional membership organizations; and Other Service Industries, which are most relevant to agriculture as they include machinery and equipment rental and leasing, welding shops that repair farm machinery and equipment, and auctioneers. Twenty businesses from this sector were included in the survey.

6.2.2.3 Importance of the Agriculture-related Business Survey

This study measures the importance of a business through its total gross sales per year and through the number of full-time equivalent (FTE) employees at the business. This provides an assessment of all the economic activities of the business, both related and unrelated to agriculture. For example if a plumbing and heating business serves both residential and agri-producing (ie, farm business) customers, the total gross sales of this business would include both agri-related and unrelated sales.

Sales for the Agri-related Businesses Surveyed

All of the businesses surveyed had some sales related to the agriculture sector. During the survey, the owner (or manager) was asked to estimate the total gross sales for their business as well as the percentage of those sales that could be attributed to the agriculture sector. For example, if a plumbing and heating business has \$500,000 in total gross sales per year, and the owner estimates that 50 percent of these sales are agri-related, then the total agri-related sales for that business would be \$250,000 (\$500,000 X 50%).

Eighty-seven percent of the businesses surveyed provided sales data (241 of 275). Statistics Canada classifies an industry with less than \$5 million in annual sales as a small business. A medium size business has sales between \$5 million and \$25 million per year. Businesses with sales above \$25 million are considered large.

By this classification, businesses related to agriculture in the study area are

generally small. Fifty-eight percent of the businesses surveyed (141 of 241) had sales under \$500,000 while 92% of businesses had sales below \$5 million (221 of 241). This study found that agri-related businesses have a wide range of sales. Sales for the businesses surveyed ranged from \$10 thousand to \$20 million. The average total gross sales for the businesses that provided sales data was \$1,446,349. This number is substantially lower than the average gross sales of \$4,240,865 for the 154 businesses surveyed in Huron County in 1996 (Cummings et al., 1998) and the average gross sales of \$2,366,082 for the 246 surveyed businesses surveyed in Simcoe County in 1999 (Cummings and Associates, 1999). However, it approaches the average gross sales of \$1,881,561 for the 246 businesses surveyed in Perth County in 1999 (Cummings and Associates, 2000) and is quite near to the average gross sales calculated from 295 businesses surveyed for the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (\$1,605,329) in 1999 (Cummings and Deschamps, 1999).

The top quarter of the businesses surveyed in the study area (61 of 241 businesses) had sales over \$1 million. This number is lower than the top quarter in all of the previous studies mentioned above, ranging from \$2.8 million for Simcoe County to \$1.5 million for the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry. Overall, the total gross sales for the 241 businesses that provided sales data in the study area, including sales related and unrelated to agriculture, was \$348,570,000.

On average, the businesses in the study attributed 37.8% of their sales to the agriculture sector. As a result, the total agri-related sales for these businesses was \$131,697,965. The average agri-related sales for the 241 businesses that provided sales data was \$546,465. There were a number of businesses with high agri-related sales figures. Eleven percent of the businesses surveyed (26 of 241) had agri-related sales in excess of \$1 million. Fifty-eight percent of the businesses surveyed had agri-related sales below \$100,000 (140 of 241). Figure 39 illustrates the percentage of agri-related sales according to industrial sector. Please note that many of the percentages reported in Figure 39 are not statistically valid because of the low number of certain business types represented in the survey. Mining, Forestry and Communication are examples of three business types that had poor representation in the survey. As detailed earlier in Section 3.3, employment associated with these three industrial sectors represents a small percentage of the total work force in the study area (Mining, 0.13%; Forestry, 0.19%; Communication and Other Utility, 2.2%) and is consistent with the employment profile of the Eastern Ontario region (Mining, 0.09%; Forestry, 0.19%; Communication and Other Utility, 3.0%).

Additional details for some of the industrial sectors that had greater representation in the survey are discussed below.

i) *Agriculture and Related Service Industries*

Average gross sales for the agriculture and related businesses were just over

\$385,000. Of this, an average of 85%, or \$327,250 are attributable to sales related to the agriculture sector.

ii) *Manufacturing Industries*

The study found that manufacturing businesses surveyed had average gross sales of \$2.2 million. Of this, 65.6%, or about \$1.45 million are sales related to agriculture.

iii) *Construction Industries*

Average gross sales for businesses surveyed in the construction industry amounted to \$1.29 million. Of this, 4%, or \$51,700 can be attributable to sales related to agriculture.

iv) *Transportation and Storage Industries*

Transportation and storage businesses surveyed in the construction industry had average gross sales of \$3.3 million. Of this, 86%, or \$2.84 million are sales related to agriculture.

v) *Wholesale Trade Industries*

The study found that surveyed wholesale trade businesses providing goods and services to farm operations average just under \$2.2 million in gross sales. Of this, 59%, or \$1.28 million are sales attributable to agriculture.

vi) *Retail Trade Industries*

Retail stores typically sell products for personal or household use. However, many also sell products to the agriculture sector. Average gross sales for the retail businesses surveyed was \$1.73 million, with 14.9%, or \$257,800 being attributable to sales related to agriculture.

vi) *Finance Industries*

As mentioned earlier in the report, sales data for finance institutions were calculated by multiplying the number of employees at the branch by an annual average salary of \$30,000. By using this method, the average gross sales for finance businesses surveyed was just over \$395,000, with 16.9%, or almost \$66,800 being attributable to agriculture.

vii) *Business Service Industries*

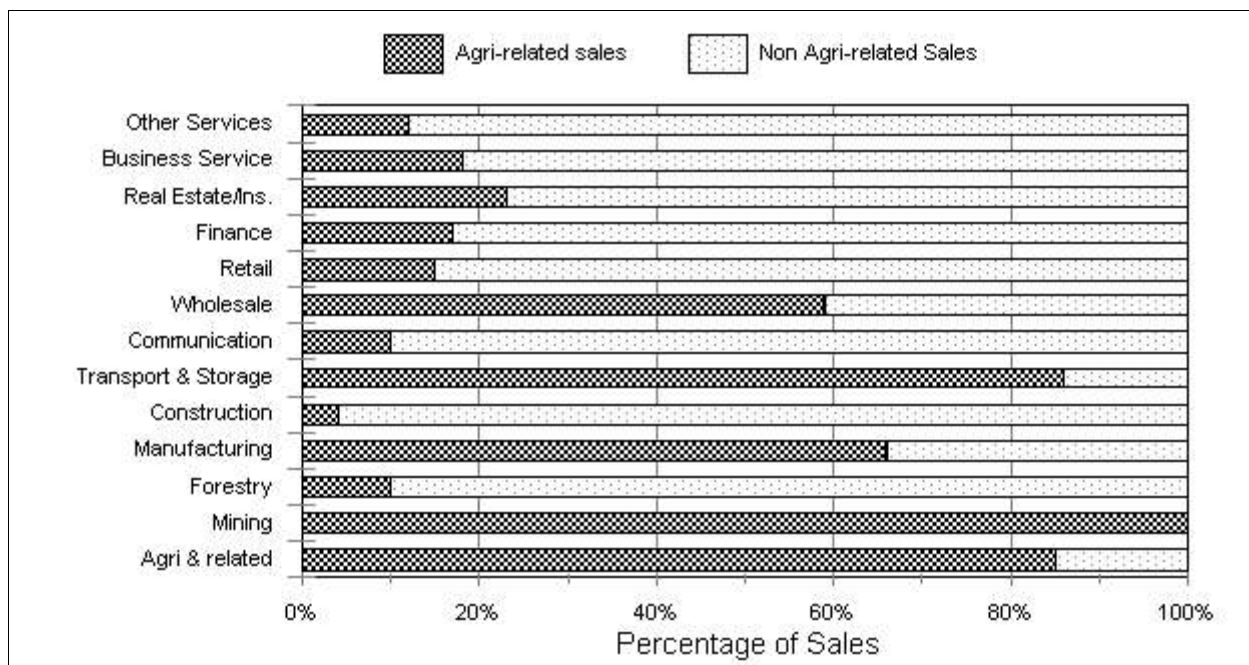
The business service industry includes legal and accounting firms. Average gross sales for the businesses surveyed from this sector were just under \$137,000, with 18.3%, or about \$25,000 being attributable to sales related to agriculture.

viii) *Other Service Industries*

Average gross sales for surveyed businesses in 'other service industries' category, were slightly over \$256,000. Of this total, close to \$31,000 or 12% of sales were

attributable to agriculture.

Figure 39 Percentage of Agri-related Sales by Industrial Sector for the Businesses Surveyed



Source: 2000 Ag-business Survey

Employment for the Agriculture-Related Businesses Surveyed

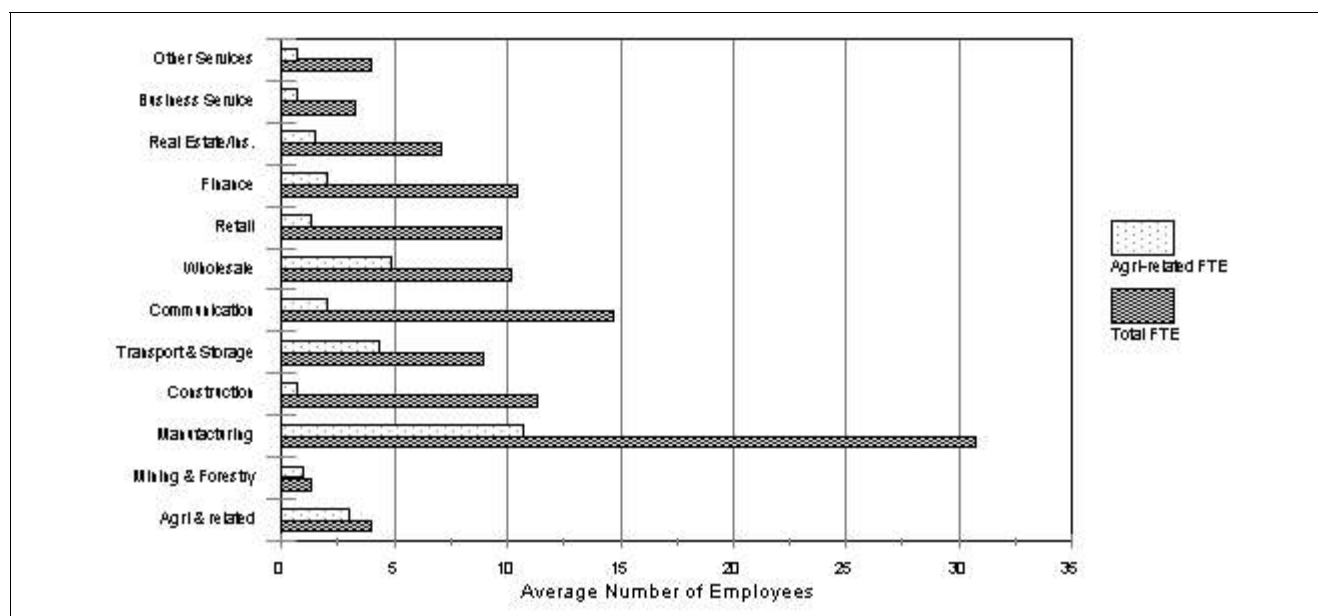
The number of employees in a business is another indicator of the importance of that business in the economy. An assumption of this study is that the percentage of sales related to agriculture is equivalent to the percentage of employees serving the agriculture sector for their business. If we refer to the example given earlier of a plumbing business with 50% agri-related sales, we would assume that half the employees working for the

business are supported by sales directed toward the agriculture sector.

According to Statistics Canada, a small business employs one to fifty people; a medium business employs 51 to 250 people and a large business employs over 250 people. By this standard, 97% of the agri-related businesses in the study are small (267 of 275 that provided employment data). The average number of employees (as calculated by full-time equivalent jobs) for the businesses surveyed is 10.5. However, about 49% of the businesses surveyed have less than 5 employees (134 of 275) and 74% of the businesses have less than 10 employees (203 of 275). Figure 40 shows the average number of employees by industrial sector for the businesses surveyed.

All of the businesses in the study exchange goods and/or services with the agriculture sector. As such, it can be assumed that each of these businesses must have employees dedicating some or all of their work-time activities to serve these exchanges. The average number of employees working on activities related to serving the agriculture sector for the businesses surveyed was 3. Of the businesses surveyed, 33% had a least two employees working strictly on agri-related activities (91 of 275).

Figure 40 Average Number of Full-Time Equivalent (FTE) Jobs per Business Surveyed, by Industrial Sector



Source: 2000 Agri-business Survey

6.2.2.4 Exports of the Agri-related Businesses Surveyed

According to the 241 businesses that provided sales data for the study, 76.4% of agri-related sales are within the study area. The remaining 23.6% of their sales are exports to other locations in Ontario (20.5%), exports to provinces other than Ontario (0.7%), and international exports (2.4%).

As shown in Figure 41, Manufacturing businesses lead the other industries in terms of percentage of sales as exports. Sales outside of the study area accounted for almost 30% of all manufacturing sales. Manufacturing businesses also led the other industrial sectors in terms of international exports with 4.9% of all sales leaving the country. The study area's close proximity to the United States has facilitated international trade, and many of the survey respondents indicated that this is where most of their international sales are located.

Wholesale Trade businesses were the next leading industry in terms of exports outside of the study area. Just under 29% of all sales for the wholesale businesses were export related, with international exports accounting for 2.9% of all sales.

Manufacturing and Wholesale Trade were the only two industrial sectors that had exports outside of Ontario to other provinces. These export sales were largely located in Quebec and were not as substantial as the international component of their export sales.

The businesses surveyed in the Agriculture and Related Services sector export 25.6% of their products/services to locations outside of the study area. There were no international sales associated with this sector.

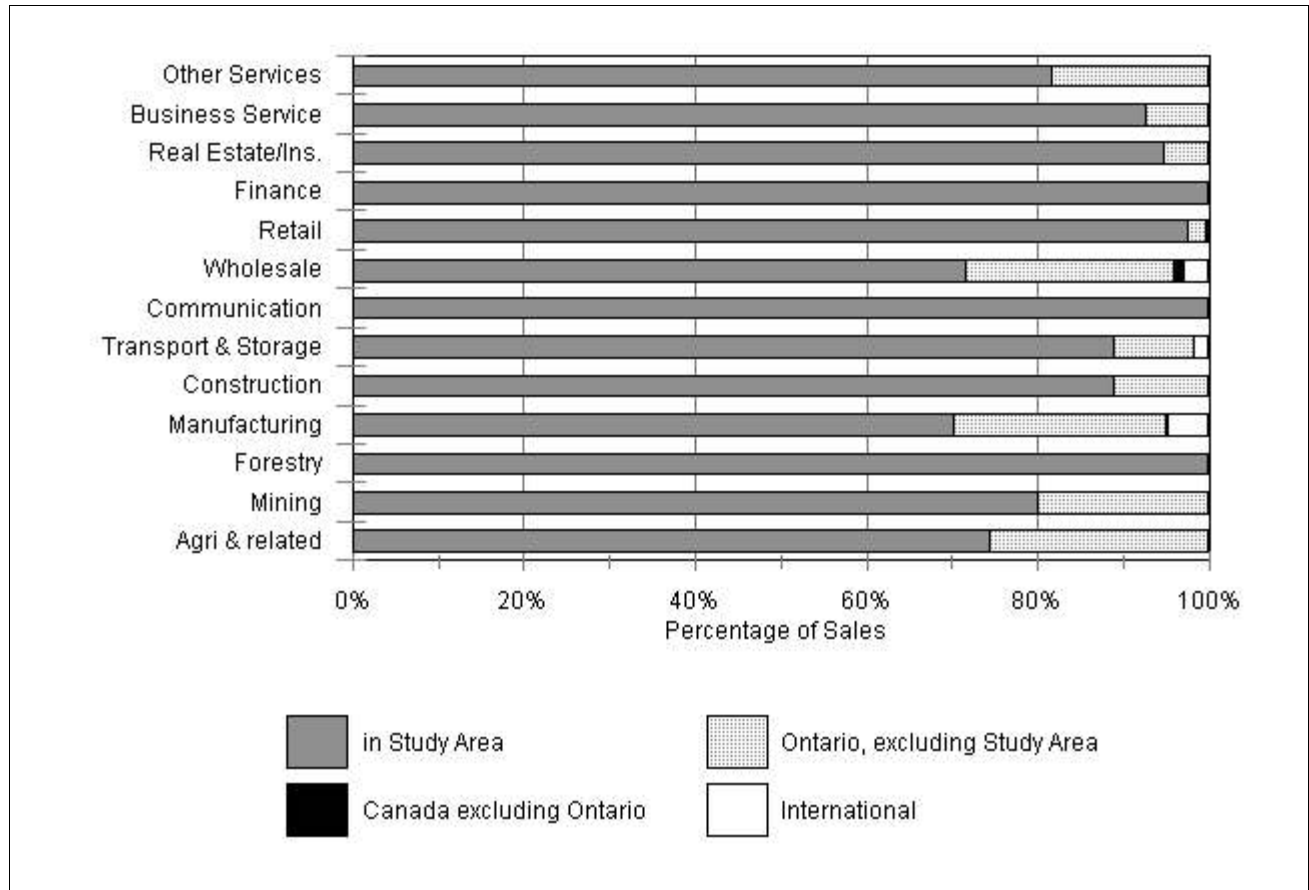
The location of export sales for the single representative from the mining industry, are in other regions of Ontario and represent 20% of all sales.

Other Business Services reported 18.3% of their sales activity as export related, all of it being located in other parts of Ontario. Many of these businesses, while based in the study area, offer services such as well drilling and 'field calls' for welding repairs that frequently take them into neighbouring counties.

Export sales of just over 11% were reported for both the Construction industry and Transportation/Storage industry. Whereas all of the export sales associated with construction remained in Ontario, a small portion of transportation sales were related to international exports (1.8%), with the remainder going to other parts of Ontario.

The remaining industries, Forestry, Communication and Other Utility Industries, Retail, Finance, Real Estate/Insurance, and Business Services all retain 90% or more of their sales within the study area.

Figure 41 Location of Agri-related Sales by Industrial Sector for the Businesses Surveyed



Source: 2000 Ag-business Survey

6.2.2.5 Summary: Agriculture-related Businesses in Frontenac, Lennox and Addington, Leeds and Grenville Counties

The analysis shows that businesses in the study area that buy from or sell to the agriculture sector, generate a substantial amount money and jobs inside the area. Furthermore, these businesses generate flows of income and expenditure outside the study area. A total of \$351 million in agri-related sales are generated by businesses located in the study area, of which \$72 million is related to sales to other parts of Ontario and \$11 million is related to sales outside of Ontario. In many instances, agri-related businesses generate additional sales in other sectors of the economy. The total sales of agri-related businesses in the study area (sales related and unrelated to agriculture) are estimated at just over \$930 million.

Indirect employment is a further impact of the agriculture sector. The total full-time equivalent jobs created by agri-related businesses in the study area is approximately 6,779 of which 1,600 are maintained by sales located outside of the study area. Indirect jobs associated with the agriculture sector are supported through sales inside and outside the study area and represent an important element of the local economy. Of the 6,779 agri and non agri-related jobs supported by the agri-related businesses, approximately 1,935 jobs are indirect agriculture jobs of which 457 are positions maintained by sales located outside of the study area. In addition, there are jobs supported outside of the study area by both study area residents purchasing outside the area and by jobs in subsidiary locations of study area businesses.

6.2.3 Estimated Induced Jobs

Induced agricultural impacts are impacts on businesses that benefit from the expenditure of wages and salaries of workers in the agriculture and agriculture-related sectors. For the purposes of the current study we have not calculated induced sales although this would clearly add a significant figure to the overall agri-related sales total of agri-related businesses in the study area through the salaries of employees in the Health and Social Services, Education and Government Services sectors.

Induced employment refers to employment generated by the wages of workers in an area. We refer to wages spent in the services sector on private or public services. The economy can be divided into two general 'production' components: goods producing (primary production including agriculture, manufacturing, and construction) and service producing. The service component consists of public sector services (health and social services, education and government) and private sector services (wholesale and retail trade, accommodation and restaurant, and finance and insurance related services). Induced effects are initiated through the spending of wages earned from agriculture and manufacturing, on public services; public service employees and agricultural workers purchase goods from retail stores; retail store workers require health services etc. This

pattern of progressive spending reflects the chain of multipliers *induced* by the initial wage in the agriculture or manufacturing sector. The methodology we used to estimate the size of this multiplier is outlined below.

To make estimates of the induced jobs in the study area, two administrative areas were utilized. The township of Elizabethtown (Leeds County) was selected to represent the study area as it has the greatest total direct agricultural (ie. farm gate) sales, while Brockville was selected as the centre which provides the selected services to Elizabethtown. The total direct employment figure for the two primary production industries in the area, Agriculture and Manufacturing (345 and 3,410, respectively for a total 3,755 jobs), was divided into the total number of jobs in the Health and Social Services, Education and Government sectors (1,820, 825, and 550 respectively for a total of 3,195 jobs).²⁷ This calculation indicates that for every job created in the two primary production industries, 0.85 induced jobs were supported in the three public service sectors.

When this number is applied to the total number of direct and indirect jobs related to agriculture for the study area as a whole (4,325 direct and 1,935 indirect jobs for a total of 6,260 jobs X 0.85), it indicates that 5,321 induced jobs are supported by agriculture.

6.2.4 Total Direct, Indirect and Induced Impacts

As shown in Table 25, there are 4,325 direct, 1,935 indirect and 5,321 induced jobs created as a result of the agriculture sector in the study area. Thus, farm operations, businesses they buy from and sell to, and services that support farmers and farm businesses, are estimated to support approximately 11,581 jobs.

When this total employment figure is divided by the total number of direct agriculture jobs, a multiplier of 2.7 is the result. This calculation allows us to estimate that for every job in the agriculture sector, an additional 1.7 jobs related to agriculture are supported.

Table 25 Total Sales and Employment Related to Agriculture in the Study Area

	Sales	Jobs
Direct	\$183,331,438	4,325
Indirect	\$351,633,567	1,935
Induced		5,321
Total	\$534,965,005	11,581

²⁷ For our estimates we have excluded the 'private sector services' from induced employment because some of these jobs were already covered in the agriculture-related business survey. This helps in avoiding a double count of some jobs.

In terms of dollars, agriculture makes a substantial contribution to the local economy. There are \$183 million in direct sales and \$351 million in indirect sales associated with agriculture in the study area. Therefore, approximately \$534 million in agri-related sales are generated in the study area. In order to estimate the sales expenditure multiplier in the study area, the total amount of agri-related sales for the area was divided by the total amount of direct sales. This produces a sales expenditure multiplier of 2.9. In short, we can use this calculation to estimate that for every dollar generated by direct agricultural sales (farm gate sales), an additional \$1.90 in sales related to agriculture is also produced. Please note, these are gross agriculture-related sales and no attempt has been made to identify the “net value-added” component.

6.2.5 Comparison to Previous Studies

A number of other agri-related business surveys have been conducted in various regions of Ontario using a similar methodology including Huron County (1998), Simcoe County (1999), Perth County (2000), Lambton County (2000) and the combined counties of Prescott, Russell, Stormont, Dundas and Glengarry in eastern Ontario (1999). Table 26 and 27 compares sales and employment data from those studies with the results from the Study Area.

While sales and job figures are not directly comparable because of differences in size and characteristics of the study areas, the multipliers associated with these figures provides some insights into the importance of the linkages between agriculture-related business and farm enterprises (Table 26). The sales multiplier associated with the study area (\$2.90) is similar to that found in Simcoe County (\$2.96) and the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (\$3.08). While Huron County possesses a higher sales multiplier than the study area (\$3.91), the study area multiplier is slightly higher than that recorded in Lambton (\$2.57) and Perth County (\$2.52).

Table 26 Total Agri-related Sales for Selected Regions of Ontario (\$ million).

Region	Huron ^a	PRSD&G ^b	Simcoe	Lambton	Perth	Study Area
Direct	\$512	\$363	\$265	\$301	\$430	\$183
Indirect	\$1,489	\$756	\$518	\$472	\$653	\$351
Total Sales	\$2,001	\$1,119	\$783	\$773	\$1,083	\$534
Sales Expenditure Multiplier	3.91	3.08	2.96	2.57	2.52	2.9

Source: Cummings et al., 1998, 1999 & 2000.

^a Huron County was the first study of this type to be carried out. The methodology has been continuously refined for the succeeding studies. The higher numbers associated with Huron County's Indirect Sales may reflect these refinements.

^b PRSD&G refers to the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry.

With respect to employment (direct, indirect and induced), the study area multiplier is similar to that of the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry and slightly larger than the multipliers recorded for Lambton and Perth County (Table 27).

Looking at the jobs generated *within agri-related businesses compared to on-farm jobs*, we find that the study area has a very low ratio of jobs in these businesses. For the study area, each on-farm job supported just under half a job indirectly through agri-related businesses (1,935 indirect jobs with agri-related businesses divided by 4,325 direct on-farm jobs). This was a similar finding for Simcoe County and Lambton County. In contrast, direct on-farm and indirect off-farm jobs approached a one-to-one ratio for Perth County and the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry. Huron County recorded the largest ratio at three off-farm jobs for each on-farm job.

Table 27 Total Agri-related Full-time Equivalent Jobs for Selected Regions of Ontario.

Region	Huron ^a	PRSD&G ^b	Simcoe	Lambton	Perth	Study Area
Direct	5025	5955	4770	3920	4935	4325
Indirect	14186	4516	2237	1624	3133	1935
Induced	3528	7007	7414	3382	3066	5321
Total Job	22739	17478	14421	8926	11134	11581
Employment Multiplier	4.53	2.94	3.02	2.28	2.26	2.67

Source: Cummings et al., 1998, 1999 & 2000.

^a Huron County was the first study of this type to be carried out. The methodology has been continuously refined for the succeeding studies. The higher numbers associated with Huron County's Indirect Jobs may reflect these refinements.

^b PRSD&G refers to the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry.

While other areas of the province have established much higher levels of total agri-related sales and support higher agri-related employment numbers, agriculture in the study area has generated impressive figures considering the wide variation in bio-physical conditions across the study area and the limitations that these conditions place on certain agri-production activities.

A comparison of agri-related sales for selected regions of Ontario showing the proportion of local sales versus sales outside the area, reveals that exports sales to international markets constitute a larger proportion of the total export activity of agri-related businesses in the Study Area than in Perth County and the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (Table 28). Furthermore, the proportion of agri-

related export sales to other regions of the province, appears to be substantially higher for the Study Area compared to the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry.

The higher level of export activity in the study area compared to Prescott, Russell, Stormont, Dundas and Glengarry, may, in part, be associated with the decrease in dairy farm numbers in the local dairy industry.²⁸ Agri-related businesses that traditionally served the local dairy sector may be expanding into markets outside of the study area as part of a strategy for countering local market erosion. Indeed, this trend was picked up in the business survey and is discussed further in Section 6.2.6.

Table 28 Location of Agri-related Sales for Selected Regions of Ontario.

Location	Huron	PRSD&G ^a	Simcoe	Perth	Study Area
	Percentage of Sales				
Sales in the County / Study Area	42.9	91.5	43.6	65.5	76.4
Sales in Other Ontario Counties	34.5	5.8	41.5	33	20.5
Sales inside Canada (excluding Ontario)	22.6	1.5	3.5	1.2	0.7
Sales outside Canada		1.2	11.4	0.3	2.4
Total Sales outside the County / Study Area	57.1	8.5	56.4	34.5	23.6
Total	100	100	100	100	100

Source: Cummings et al., 1998, 1999 & 2000.

^a PRSD&G refers to the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry.

6.2.6 Observations from Agri-related Businesses

Throughout the duration of the survey, business owners and managers often provided additional commentary about the general state of agriculture in the area and its association with the broader economy. Some of these observations have been included here to illustrate how 'change' is affecting the agriculture sector in the study area.

²⁸ As noted in Section 3.4.6, the total volume of milk produced in the study area has declined with the decline in dairy farm numbers but production on a per cow basis has actually increased, As well the average milking herd size in the study area increased from 41.6 cows to 45 cows between 1991 and 1996.

Many of the respondents confirmed the trend shown in the statistical data which points to a steady decline in livestock type farm numbers. Respondents noted how the number of dairy farm type operations decreased substantially within the past six to twelve months. They suggest that this is due to a combination of factors including:

- an aging farm operator population that lacks a 'next generation' family member to carry on the business
- rising milk quota prices which make leaving the industry attractive
- lack of labour with suitable skills and experience and/or lack of income to compete with wages offered elsewhere in other sectors of the economy

Respondents noted that dairy farms are being converted to hobby farms and/or the land is going into cash crops. For some businesses, this has represented an opportunity to expand their business activity. Custom farming operators indicated that their business is expanding as they take on more acres of farm land for cropping.

The loss of dairy farms in the area is causing some agri-related businesses to expand their market area. As described by one feed mill operator, the decline in dairy farms has reduced the amount of income to go around and businesses are attempting to maintain or increase their sales activity by pursuing markets in other regions of the province.

Several veterinarians expressed similar concerns regarding the loss of dairy farms in the study area and the resulting decline in local sales. While some clinics have expanded their market area to maintain their business activity, others have opted to move out of the large animal practice entirely to focus on small animals.

One electrical contractor commented on how his linkage with the agriculture sector accounted for 20% of his total business earnings ten to fifteen years ago. Currently, less than 5% of his total business activity comes from the agriculture sector and he finds himself travelling further to maintain that activity as the loss of farms in the area increasingly expands the distance between farms.

An owner of a refrigeration business which specializes in servicing bulk milk tanks noted how a stretch of road that featured six dairy farm operations just twelve months ago, now has a single dairy farm. The respondent identified a direct connection between the cumulative loss of individual dairy farms and a notable decline in agri-related business. The result has been a reduction in sales and staff.

Several farm equipment dealers described how they expanded their product line in response to a growing demand for lawn and garden type implements. For one equipment dealer, the decline of full-time farms and the expansion of hobby type farms has resulted in increased sales of small horsepower tractors (20-40 h.p.), and fewer sales of 'big ticket' items such as large horsepower tractors and heavy field implements.

Two computer firms expressed an interest in expanding their activity with the agri-sector, particularly in relation to opportunities they see in 'web-based' marketing on the Internet. Internet technology is currently having an impact on certain agri-related businesses including auctioneers. Two auctioneers commented on how some farmers in the area are utilizing electronic trading sites to sell or purchase used farm equipment rather than taking the traditional route through an auction. One auctioneer is moving to establish his own electronic trading site.

A locally based newspaper with "substantial" rural circulation noted that agri-based businesses and agri-related businesses were not using the paper to advertize. He speculated that these businesses were likely placing ads in major trade papers and journals. He pointed to the ongoing process of consolidation in the agri-industry in the area and the reduction of small businesses that traditionally provided many agri-inputs, leading to less competition and the emergence of 'regional dealers' that have developed a solid reputation as "the source" for agri-related materials.

While the statistical data points to a steady increase in miscellaneous specialty type farms, these types of farms were infrequently mentioned by the agri-related businesses in our survey. This suggests that the specialty sector is still in the early stages of establishing itself as a significant agri-sector in terms of generating sales and supporting jobs in the area. The decline of the livestock sector on the other hand, is widely viewed as a serious issue that poses immediate and long-term implications for many local agri-related businesses in the study area.

7.0 Results Conclusions

Agriculture in Frontenac, Lennox and Addington, and the combined Counties of Leeds and Grenville has significant linkages with many industrial sectors in the region. These connections serve an important economic function in creating additional income and employment opportunities that would otherwise not exist. Through its linkages with other sectors of the economy, agriculture provides approximately 8% of employment in the area and generates approximately \$85,300 in sales for every direct and indirect job supported by agriculture. Estimated expenditures of \$534 million represent the estimated flow of sales and expenditures generated by farm operations as well as sales related to the agriculture sector.

The agriculture sector touches an estimated 644 businesses selling to or buying from agriculture as well as the vital public sector. The business survey data reveals that 1,935 jobs are tied indirectly to the agriculture sector through expenditures by agri-related businesses. As well, an additional 5,321 jobs in education, health and government services are estimated to be supported by the local agriculture sector. When combined with the 4,325 jobs directly supported by agriculture, the total contribution of agriculture

amounts to just under 11,600 jobs. Given that the economy of the study area supported a total of 133,370 jobs in 1996, this clearly demonstrates the important role that agriculture continues to play in the local economy.

Another way of viewing the impact of agriculture is from the perspective of its contribution to the economy relative to some of the major manufacturing firms in the study area. With its direct contribution of 4,325 jobs, the agriculture sector is the equivalent of approximately two Dupont's (Dupont Canada directly employs a total 2,333 in the study area), three SCI Systems Inc. (1,550), six Good Year's (650) or seven Bombardier's (620).²⁹

Sales and employment multipliers for the study area are comparable to other regions of the province. Multipliers associated with the sales and employment data suggest 1.7 jobs are supported off the farm for every 1 on the farm, and \$1.90 in sales are generated in the wider economy for every \$1 of farm gate sales. The local job multiplier exceeds the figures arrived at for Perth and Lambton County and falls just short of the figure for the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (PRSD&G). The local sales multiplier also exceeds estimates for Lambton and Perth County and virtually matches estimates for PRSD&G and Simcoe County.

The study area is active in exporting agri-related products and services beyond its borders. Sales of agri-related goods and services beyond the borders of the study area approached 24% of total sales for the businesses surveyed. In contrast, agri-related export sales for PRSD&G accounted for 8.5% of total sales. The study area reported export activity across a number of industrial sectors including manufacturing, wholesale, business services, construction, transportation/storage and agriculture and related services. For most of these sectors, the primary destination for exports is to other parts of Ontario. However, several manufacturing and wholesale agri-related businesses carry on a substantial amount of export trade with United States. International export activity is partly facilitated by the study areas' close proximity to the United States but is also likely a factor of the low value of the Canadian dollar.

Agriculture production across the study area can be described as being 'variable'. The variation in production is partly a factor of the high incidence of soils which are unsuitable for agriculture. Indeed, nearly 48% of the total area consists of unsuitable soils with the bulk of this being located in the northern half of Lennox-Addington and the northern two-thirds of Frontenac.

²⁹ Employment figures are taken from: Kingston Economic Development Corporation Business Guide, 1998 ; County of Lennox and Addington Economic Development Office, 2000 ; Brockville Economic Development Office, (www.brockville.com/Industrydir.html) , 2000. ; Paul Blais, L&A Economic Development Manager.

A further factor which has significant influence on variation is the concentration of farm types in certain parts of the study area. Townships in the south tend to have a higher percentage of their total farmland in crop production, and typically have a higher concentration of livestock type farms than their counterparts to the north. Dairy, hog and poultry in particular, appear to be more highly concentrated in the southern townships. Townships in the south also tend to report higher than average gross farm receipts (per farm & per farmland acre basis). Where there is a notable difference in total farm gate receipts between adjacent townships, the variance is often accounted for by the presence of a large number of dairy farms and/or other intensive livestock enterprises such as hog or poultry production.

Agriculture in the study area is experiencing significant structural change. Livestock farm numbers in the study area have declined from 1,863 farms in 1986 to 1,531 farms in 1996, with the great majority of farm losses occurring in the dairy sector (-213 farms). Dairy farms presently account for just over 22% of all farms in the study area, down from 36% in 1981. In contrast, dairy farms in the combined Counties of Prescott, Russell, Stormont, Dundas and Glengarry (PRSD&G) constitute 42% of all farms in the area.

The loss of dairy farms in the study area is presenting challenges for agri-related businesses. Many business owners see a strong connection between the decline in dairy farms and an ongoing decline in agri-related sales. In assessing the impact of the dairy sector on the economy of PRSD&G, Van Hoes (1995, p.102) describes how a decline in dairy farm expenditures affects various aspects of the economy. A decline in dairy farm expenditures results in a reduction of on-farm labour and aggregate profit, input purchases and a lower tax base. Extending the linkages further, the reduction in farm expenditures could result in less local induced activity such as reduced retail trade and less tax collection, prompting the closure of local retail shops and the offering of fewer municipal services. As noted by Van Hoes, the negative consequences will likely be severest in those communities that are more dependent on the dairy sector (p. 103). Furthermore, while new productive uses will emerge for those resources released by dairy farming, they may not provide similar economic returns.

While recognizing the benefits of retaining a strong livestock sector, it is important to explore the opportunities that are emerging in other agri-sectors such as the specialty farm sector. This sector now accounts for 16% of all farm types in the region and includes activities such as maple syrup production, fur-farming, honey production, deer/elk farming, greenhouse production and mushroom production. The growth of the specialty sector is contributing to the diversity of production in the study area. One benefit associated with a more diverse agricultural base, is that it serves to better insulate the economy from the cyclical price fluctuations experienced by some agri-commodities. The specialty sector may also offer new opportunities for expanding value-added production in the study area. The growth of value-added activity has important implications for sales and employment multipliers in the local economy as each additional level of processing activity procures

wealth that would otherwise leave the region.

Approximately seven percent of the businesses surveyed indicated that they make purchases from the local agriculture sector. These commodities are converted into value-added products such as livestock feed and consumer products.³⁰ In the past ten years, value-added production has increased substantially across Canada with emerging market opportunities in relation to shifting consumer demands for a broader range of products that address specific consumer interests including convenience and environmental concerns.

These changes will require producers and processors to become more active in areas of market research, seeking out professional services to assist in identifying potential markets and new consumer needs. Producers and processors will have to become more resourceful in finding services in the private and public sector that can aid in developing their business plans. This may mean approaching organizations such as local business development agencies that have broader mandates than working exclusively with the agriculture sector. For business and economic development officials, greater emphasis should be placed on coordinating efforts between primary production and manufacturing to maximize the retention of income and employment in the area by exploring/developing opportunities for preparing/processing more locally grown commodities for final consumption.

From a policy perspective, economic development initiatives have tended to ignore or devalue the importance of traditional resource based economic activities in the interest of stimulating manufacturing in non-related sectors. In various parts of Canada, economic development policies have been implemented with the assumption that regions can only prosper if they become industrialized. As outlined by Bradfield (1988, p.29),

(t)his has gone so far that many provinces have not sought to develop the manufacturing spin-offs from their resources, extending their comparative advantage. Instead, subsidies have been offered, often on a massive scale, to attract industries unrelated to the existing resource base or to the manufacturing structure or to the needs of the people.

The study reveals the extensive linkages that agriculture has with other sectors of the economy and its capacity to produce local economic benefits that extend well beyond the farm gate. Planners and policymakers need to view agriculture in context of the overall benefits and opportunities it provides.

³⁰ Value-added products can be grouped into two categories: intermediate commodities and consumer food products. Intermediate commodities are those that have been partially processed (such as soybean meal and cattle hides) or those used as inputs on the farm (such as seeds and animal feed) or used by food manufacturers (such as flour and sweeteners). Consumer food products are primarily shipped for consumption in the retail market and food service sector.

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Appendices

Appendix A.

Geographic Area Amalgamations by Census Divisions and Census Consolidated Subdivisions for Study Area, 1986 - 1996.

Appendix B.

Population and Change, 1991 - 1996 Frontenac County & Census Subdivisions (Adjusted to reflect the most recent structuring of municipalities, February 2000).

Appendix C.

Population and Change, 1991 - 1996 Frontenac County & Census Subdivisions (Pre-amalgamation).

Appendix D.

Major employers in Frontenac County, Lennox and Addington County, and Leeds and Grenville County.

Appendix E.

Employment by Standard Industrial Classification Divisions (SIC 1980) for Frontenac, Leeds and Grenville, Lennox and Addington, and Study Area, 1996.

Appendix F.

Employment and Employment Change by Standard Industrial Classification Divisions (SIC 1980) for Frontenac, and Lennox and Addington County 1991-1996.

Appendix G.

Total Number of Farms, Total Farmland Area, and Average Farm Size by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

Appendix H.

Total Land Area, Farm Land Area as a Percentage of Total Land Area, Land Area in Crops, Percentage of Farm Land in Crops, Crop Land Area as a Percentage of Total Land Area by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

Appendix I.

Number of Jobs in Agriculture, Number of Acres of Farm Land & Crop Land per Job in Agriculture by Township for the Counties of Frontenac, and Lennox and Addington, 1991 and 1996.

Appendix J.

Total Farm Gate Receipts, Farm Gate Receipts per Farm, Farm Gate Receipts per Acre of Farm Land, Farm Gate Receipts per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

Appendix K.

Total Farm Capital, Capital per Farm, Capital per Acre of Farm Land, Capital per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

Appendix L.

Total Farm Expenses, Expenses per Farm, Expenses per Acre of Farm Land, Expenses per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1990 - 1995.

Appendix M.

Net Farm Receipts, Farm Expenses as a Percentage of Farm Receipts, Net Receipts per Farm, Net Receipts per acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

Appendix N.

Farm Operator Average Age by Township for the Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, 1991 - 1996.

Appendix O.

Farm Operating Arrangements for the Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, Eastern Ontario, Ontario, 1981, 1986, 1991 and 1996.

Appendix P.

Number of Farms by Major Products for Frontenac, Leeds, Grenville, and Lennox and Addington, 1986 and 1991.

Appendix Q.

Classification Structure for Division A - Agricultural and Related Service Industries.

Appendix R.

Profile of Selected Specialty Farm Types in the Study Area, 1996.

Appendix S.

Agriculture Related Business Survey Questionnaire

Appendix A.

Geographic Area Amalgamations by Census Divisions and Census Consolidated Subdivisions for Study Area, 1986 - 1996.

Current municipalities	1996 Census municipalities	1991 Census municipalities	1986 Census municipalities
Frontenac County			
<i>Central Frontenac twp</i> (Hinchinbrooke twp; Kennebec twp; Olden twp; Oso twp)	<i>Hinchinbrooke</i> <i>Olden</i> <i>Oso</i> & <i>Palmerston and North & South Canonto</i>	<i>Hinchinbrooke</i> <i>Olden</i> <i>Oso</i>	<i>Kennebec & Barrie</i> <i>Hinchinbrooke</i> <i>Olden</i> <i>Oso</i>
<i>Frontenac Islands twp</i> (Howe Island twp; Wolfe Island twp)	<i>Wolfe Island</i> & <i>Howe Island</i>	<i>Wolfe Island</i> & <i>Howe Island</i>	<i>Howe Island</i> <i>Wolfe Island</i>
<i>Kingston city</i> (Kingston twp; Kingston city; Pittsburgh twp)	<i>Kingston City</i> <i>Kingston twp</i> <i>Pittsburgh</i>	<i>Kingston City</i> <i>Kingston twp</i> <i>Pittsburgh</i>	<i>Kingston City</i> <i>Kingston twp</i> <i>Pittsburgh</i>
<i>North Frontenac twp</i> (Barrie twp; North and South Canonto twp; Clarendon and Miller and Palmerston twp)	<i>Clarendon and Miller & Barrie, Kennebec</i>	<i>Clarendon and Miller & Barrie, Kennebec, & Palmerston and North & South Canonto</i>	<i>Palmerston & North & South Canonto & Clarendon & Miller</i>
<i>South Frontenac twp</i> Bedford twp; Loughborough twp; Portland twp; Storrington twp	<i>Bedford</i> <i>Loughborough</i> <i>Portland</i> <i>Storrington</i>	<i>Bedford</i> <i>Loughborough</i> <i>Portland</i> <i>Storrington</i>	<i>Bedford</i> <i>Loughborough</i> <i>Portland</i> <i>Storrington</i>
Lennox and Addington County			
<i>Addington Highlands</i> (Denbigh, Abinger & Ashby; Kaladar, Anglesea & Effingham)	<i>Kaladar, Anglesea & Effingham & Denbigh, Abinger & Ashby</i>	<i>Kaladar, Anglesea & Effingham & Denbigh, Abinger & Ashby</i>	<i>Kaladar, Anglesea & Effingham & Denbigh, Abinger & Ashby</i>
<i>Greater Napanee town</i> (Adolphustown; Napanee town; Richmond twp; North Fredericksburgh twp; South Fredericksburgh twp)	<i>Adolphustown</i> <i>Napanee town</i> <i>Richmond</i> <i>North Fredericksburgh</i> <i>South Fredericksburgh</i>	<i>Adolphustown</i> <i>Napanee town</i> <i>Richmond</i> <i>North Fredericksburgh</i> <i>South Fredericksburgh</i>	<i>Adolphustown</i> <i>Napanee town</i> <i>Richmond</i> <i>North Fredericksburgh</i> <i>South Fredericksburgh</i>
<i>Loyalist twp</i> (Amherst Island twp; Bath village; Ernestown twp)	<i>Amherst Island</i> <i>Bath village</i> <i>Ernestown</i>	<i>Amherst Island</i> <i>Bath village</i> <i>Ernestown</i>	<i>Amherst Island</i> <i>Bath village</i> <i>Ernestown</i>
<i>Stone Mills twp</i> (Camden East twp; Newburgh village; Sheffield twp)	<i>Camden East</i> <i>Newburgh village</i> <i>Sheffield</i>	<i>Camden East</i> <i>Newburgh village</i> <i>Sheffield</i>	<i>Camden East</i> <i>Newburgh village</i> <i>Sheffield</i>

Source: R.Jane Cunningham, OMAFRA Kemptville February 2000 ; Census of Canada 1986, Agriculture - Ontario ; Statistics Canada, Agricultural Profile of Ontario 1991 - Part 2 ; Statistics Canada, Agricultural Profile of Ontario 1996.

Appendix A (cont.).

Current municipalities	1996 Census municipalities	1991 Census municipalities	1986 Census municipalities
United Counties of Leeds & Grenville - Leeds County portion			
<i>Athens</i>	<i>Athens village</i>	<i>Athens village</i>	<i>Athens village</i>
<i>Brockville</i>	<i>Brockville city</i>	<i>Brockville city</i>	<i>Brockville city</i>
<i>Elizabethtown</i>	<i>Elizabethtown twp</i>	<i>Elizabethtown twp</i>	<i>Elizabethtown twp</i>
<i>Front of Escott</i>	<i>Front of Escott twp</i>	<i>Front of Escott twp</i>	<i>Front of Escott twp</i>
<i>Front of Leeds and Lansdowne</i>	<i>Front of Leeds and Lansdowne twp</i>	<i>Front of Leeds and Lansdowne twp</i>	<i>Front of Leeds and Lansdowne twp</i>
<i>Front of Yonge</i>	<i>Front of Yonge twp</i>	<i>Front of Yonge twp</i>	<i>Front of Yonge twp</i>
<i>Gananoque</i>	<i>Gananoque town</i>	<i>Gananoque town</i>	<i>Gananoque town</i>
<i>Kitley</i>	<i>Kitley twp</i>	<i>Kitley twp</i>	<i>Kitley twp</i>
<i>Rear of Leeds and Lansdowne</i>	<i>Rear of Leeds and Lansdowne twp</i>	<i>Rear of Leeds and Lansdowne twp</i>	<i>Rear of Leeds and Lansdowne twp</i>
<i>Rear of Yonge and Escott</i>	<i>Rear of Yonge and Escott twp</i>	<i>Rear of Yonge and Escott twp</i>	<i>Rear of Yonge and Escott twp</i>
<i>Rideau Lakes twp</i> (Bastard & South Burgess twp; Newboro village; North Crosby twp; South Crosby twp; South Elmsley twp)	<i>Bastard & South Burgess</i> <i>Newboro village</i> <i>North Crosby</i> <i>South Crosby</i> <i>Elmsley</i>	<i>Bastard & South Burgess</i> <i>Newboro village</i> <i>North Crosby</i> <i>South Crosby</i> <i>Elmsley</i>	<i>Bastard & South Burgess</i> <i>Newboro village</i> <i>North Crosby</i> <i>South Crosby</i> <i>Elmsley</i>
<i>Westport</i>	<i>Westport village</i>	<i>Westport village</i>	<i>Westport village</i>
United Counties of Leeds & Grenville - Grenville County portion			
<i>Augusta</i>	<i>Augusta twp</i>	<i>Augusta twp</i>	<i>Augusta twp</i>
<i>Cardinal</i>	<i>Cardinal village</i>	<i>Cardinal village</i>	<i>Cardinal village</i>
<i>Edwardsburgh</i>	<i>Edwardsburgh twp</i>	<i>Edwardsburgh twp</i>	<i>Edwardsburgh twp</i>
<i>Merrickville-Wolford village</i>	<i>Merrickville</i> <i>Wolford</i>	<i>Merrickville</i> <i>Wolford</i>	<i>Merrickville</i> <i>Wolford</i>
<i>North Grenville twp</i> (Kemptville town; Oxford-on-Rideau twp; South Gower twp)	<i>Kemptville</i> <i>Oxford-on-Rideau</i> <i>South Gower</i>	<i>Kemptville</i> <i>Oxford-on-Rideau</i> <i>South Gower</i>	<i>Kemptville</i> <i>Oxford-on-Rideau</i> <i>South Gower</i>
<i>Prescott</i>	<i>Prescott town</i>	<i>Prescott town</i>	<i>Prescott town</i>

Source: R.Jane Cunningham, OMAFRA Kemptville February 2000 ; Census of Canada 1986, Agriculture - Ontario ; Statistics Canada, Agricultural Profile of Ontario 1991 - Part 2 ; Statistics Canada, Agricultural Profile of Ontario 1996.

Appendix B.

Population and Change, 1991 - 1996 Frontenac County & Census Subdivisions (Adjusted to reflect the most recent structuring of municipalities, February 2000).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Frontenac County	129089		136365		5.64%	3819.7
Frontenac Islands twp	1516	1.17%	1661	1.22%	9.56%	170.9
Kingston city	107835	83.54%	112605	82.58%	4.42%	446.8
South Frontenac twp	14090	10.91%	15711	11.52%	11.50%	975.2
Central Frontenac twp	4054	3.14%	4615	3.38%	13.84%	1038.8
North Frontenac twp	1594	1.23%	1773	1.30%	11.23%	1188.1

Population and Change, 1991 - 1996 Leeds County & Census Subdivisions (Adjusted to reflect the most recent structuring of municipalities, February 2000).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Leeds County	59608		62185		4.32%	2194.7
Elizabethtown twp	7439	12.48%	7761	12.48%	4.33%	333
Brockville city	21582	36.21%	21752	34.98%	0.79%	20.3
Front of Yonge twp	2357	3.95%	2530	4.07%	7.34%	131.4
Front of Escott twp	1275	2.14%	1383	2.22%	8.47%	113.3
Front of Leeds and Lansdowne twp	4686	7.86%	4897	7.87%	4.50%	286.6
Gananoque town	5209	8.74%	5219	8.39%	0.19%	9
Rear of Leeds and Lansdowne twp	2774	4.65%	2895	4.66%	4.36%	214.4
Rideau Lakes twp	8602	14.43%	9564	15.38%	11.18%	733.7
Westport village	664	1.11%	683	1.10%	2.86%	1.8
Rear of Yonge and Escott twp	1868	3.13%	2043	3.29%	9.37%	122.8
Athens village	961	1.61%	997	1.60%	3.75%	1.9
Kitley twp	2191	3.68%	2461	3.96%	12.32%	226.5

Population and Change, 1991 - 1996 Grenville County & Census Subdivisions (Adjusted to reflect the most recent structuring of municipalities, February 2000).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Grenville County	30627		34099		11.34%	1195.5
Edwardsburgh	4763	15.55%	4938	14.48%	3.67%	308.8
Cardinal village	1552	5.07%	1777	5.21%	14.50%	2.3
Augusta twp	7176	23.43%	7626	22.36%	6.27%	314.4
Merrickville-Wolford village	2427	7.92%	2630	7.71%	8.36%	215.2
North Grenville twp	10197	33.29%	12648	37.09%	24.04%	350.7
Prescott town	4512	14.73%	4480	13.14%	-0.71%	4.1

Appendix B (cont.)

Population and Change, 1991 - 1996 Lennox and Addington County & Census Subdivisions
(Adjusted to reflect the most recent structuring of municipalities, February 2000).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Lennox and Addington County	37243		39203		5.26%	2840.7
Loyalist twp	13887	37.29%	14551	37.12%	4.78%	342.3
Greater Napanee town	14507	38.95%	14994	38.25%	3.36%	456.3
Stone Mills twp	6656	17.87%	7229	18.44%	8.61%	710.6
Addington Highlands twp	2193	5.89%	2429	6.20%	10.76%	1331.4

Population and Change, 1991 - 1996 for Counties of Frontenac, Leeds, Grenville, and Lennox
and Addington (Adjusted to reflect the most recent structuring of municipalities, February 2000).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Total for Study Area	256567		271852		5.96%	10050.4
Frontenac County	129089	50.31%	136365	50.16%	5.64%	3819.7
<i>Frontenac County excluding the city of Kingston</i>	21254	8.28%	23760	8.74%	11.79%	3372.9
Leeds County	59608	23.23%	62185	22.87%	4.32%	2194.7
<i>Leeds County excluding the city of Brockville</i>	38026	14.82%	40433	14.87%	6.33%	2174.4
Grenville County	30627	11.94%	34099	12.54%	11.34%	1195.5
Lennox and Addington County	37243	14.52%	39203	14.42%	5.26%	2840.7
Study Area excluding cities of Kingston and Brockville	127150		137495		8.14%	9582.9

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Appendix C.

Population and Change, 1991 - 1996 Frontenac County & Census Subdivisions (Pre-amalgamation).

	Population 1991	Percent	Population 1996	Percent	Percent change	Land area km2
Frontenac County	129089		136365		5.64%	3819.7
Wolf Island	1097	0.85%	1180	0.87%	7.57%	135.4
Howe Island	419	0.32%	481	0.35%	14.80%	35.5
Pittsburgh	11447	8.87%	12902	9.46%	12.71%	208.3
Kingston	39791	30.82%	43756	32.09%	9.96%	208.9
Kingston (city)	56597	43.84%	55947	41.03%	-1.15%	29.6
Storrington	3940	3.05%	4468	3.28%	13.40%	237.4
Louborough	4489	3.48%	5046	3.70%	12.41%	212
Portland	4734	3.67%	5085	3.73%	7.41%	219.4
Hinchinbrooke	1117	0.87%	1328	0.97%	18.89%	286.8
Bedford	927	0.72%	1112	0.82%	19.96%	306.4
Oso	1361	1.05%	1413	1.04%	3.82%	187.1
Olden	811	0.63%	906	0.66%	11.71%	269
Kennebec	765	0.59%	968	0.71%	26.54%	295.9
Barrie	728	0.56%	822	0.60%	12.91%	216.3
Clarendon and Miller	473	0.37%	545	0.40%	15.22%	439.9
Palmerston and North & South Canonto	393	0.30%	406	0.30%	3.31%	531.9

Population and Change, 1991 - 1996 Lennox and Addington County & Census Subdivisions (Pre-amalgamation).

	Population 1991	Percent	Population 1996	Percent	Percent change	Land area km2
Lennox and Addington County	37243		39203		5.26%	2840.7
Amherst Island	401	1.08%	399	1.02%	-0.50%	67.5
Ernestown	12229	32.84%	12763	32.56%	4.37%	266
Bath (village)	1257	3.38%	1389	3.54%	10.50%	8.8
South Fredericksburgh	1222	3.28%	1197	3.05%	-2.05%	89.4
Adolphustown	886	2.38%	946	2.41%	6.77%	50.5
North Fredericksburgh	3183	8.55%	3258	8.31%	2.36%	101.8
Richmond	4037	10.84%	4143	10.57%	2.63%	210.2
Napanee (town)	5179	13.91%	5450	13.90%	5.23%	4.4
Camden East	4564	12.25%	4928	12.57%	7.98%	355.3
Newburgh (village)	712	1.91%	729	1.86%	2.39%	14.5
Sheffield	1380	3.71%	1572	4.01%	13.91%	340.8
Kaladar, Anglesea and Effingham	1481	3.98%	1712	4.37%	15.60%	698.7
Denbigh, Abinger and Ashby	712	1.91%	717	1.83%	0.70%	632.7

Appendix C (cont).

Population and Change, 1991 - 1996 Leeds County & Census Subdivisions (Pre-amalgamation).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Leeds County	59608		62185		4.32%	2194.7
Elizabethtown	7439	12.48%	7761	12.48%	4.33%	333
Brockville (city)	21582	36.21%	21752	34.98%	0.79%	20.3
Front of Yonge	2357	3.95%	2530	4.07%	7.34%	131.4
Front of Escott	1275	2.14%	1383	2.22%	8.47%	113.3
Front of Leeds and Lansdowne	4686	7.86%	4897	7.87%	4.50%	286.6
Gananoque (town)	5209	8.74%	5219	8.39%	0.19%	9
Rear of Leeds and Lansdowne	2774	4.65%	2895	4.66%	4.36%	214.4
South Crosby	1677	2.81%	1910	3.07%	13.89%	174.1
North Crosby	968	1.62%	1097	1.76%	13.33%	191.2
Westport (village)	664	1.11%	683	1.10%	2.86%	1.8
Newboro (village)	282	0.47%	291	0.47%	3.19%	3.4
Bastard and South Burgess	2610	4.38%	2692	4.33%	3.14%	266.5
Rear of Yonge and Escott	1868	3.13%	2043	3.29%	9.37%	122.8
Athens (village)	961	1.61%	997	1.60%	3.75%	1.9
Kitley	2191	3.68%	2461	3.96%	12.32%	226.5
South Elmsley	3065	5.14%	3574	5.75%	16.61%	98.5

Population and Change, 1991 - 1996 Grenville County & Census Subdivisions (Pre-amalgamation).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Grenville County	30627		34099		11.34%	1195.5
Augusta	7176	23.43%	7626	22.36%	6.27%	314.4
Cardinal (village)	1552	2.60%	1777	2.86%	14.50%	2.3
Edwardsburgh	4763	15.55%	4938	14.48%	3.67%	308.8
Wolford	1438	4.70%	1603	4.70%	11.47%	211.1
Merrickville (village)	989	3.23%	1027	3.01%	3.84%	4.1
Oxford-on-Rideau	5513	18.00%	6876	20.16%	24.72%	259.4
Kemptville (town)	2735	8.93%	3272	9.60%	19.63%	2.5
South Gower	1949	6.36%	2500	7.33%	28.27%	88.8
Prescott (town)	4512	7.57%	4480	7.20%	-0.71%	4.1

Population and Change, 1991 - 1996 for Counties of Frontenac, Leeds, Grenville, and Lennox and Addington (Pre-amalgamation).

	Population 1991	Percent	Population 1996	Percent	% change	Land area km2
Total for Study Area	256567		271852		5.96%	10050.4
Frontenac County	129089	50.31%	136365	50.16%	5.64%	3819.7
<i>Frontenac County excluding the city of Kingston</i>	72492	28.25%	80418	29.58%	10.93%	3790.1
Leeds County	59608	23.23%	62185	22.87%	4.32%	2194.7
<i>Leeds County excluding the city of Brockville</i>	38026	14.82%	40433	14.87%	6.33%	2174.4
Grenville County	24563	9.57%	27842	10.24%	13.35%	1189.1
Lennox and Addington County	37243	14.52%	39203	14.42%	5.26%	2840.7
Study Area excluding the cities of Kingston and Brockville	178388		194153		8.84%	10000.5

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Appendix D.

Major employers in Frontenac County, Lennox and Addington County, and Leeds and Grenville County.

Name of Company / Organization	Number of Employees	Name of Company / Organization	Number of Employees
Frontenac County			
Canadian Forces Base Kingston	4787	Royal Military College	900
Queens University	3800	Empire Financial Group	500
Limestone District School Board	2710	NORCOM / CDT	465
Correctional Services	2670	Alcan	373
Kingston General Hospital	2324	Celanese Canada Inc.	272
Hotel Dieu Hospital	1594	Bell Canada	250
Dupont Canada	1510	DuPont Research & Development	173
Providence Continuing Care	1000	T-Line Service Ltd.	143
Ontario Ministry of Transportation	998	Hummingbird Communication	135
City of Kingston	990		
Lennox and Addington County (manufacturers only)			
Good Year Canada	650	GT Machining & Fabricating Ltd.	125
Bombardier Transportation	620	Lafarge Canada Ltd.	110
Strathcona Paper Company	180	Continental Conveyor (Ont.) Ltd.	45
Gibbard Furniture Shops Ltd.	150	Barmish Inc.	41
KoSa (polyester resins)	140	Flintshire Farms Inc.	30
Leeds and Grenville County			
Upper Canada District School Board (including teachers)	1575	Black and Decker Canada	180
		Trillium Health Care Mfg.	175
SCI Systems Inc.	1550	Bumbræ Farms	170
DuPont Canada	650	Aimtronics	167
Brockville Psychiatric Hospital	625	Hydro Agri Maitland	160
Brockville General Hospital	500	Motor Coils Manufacturing Ltd.	124
Provincial Nursing & Retirement Centres Ltd.	333	Eastem Independent Telecommunications	120
Proctor and Gamble Inc.	300	Canarm Ltd.	120
Shorewood Packaging	280	Lanark, Leeds & Grenville District Health Unit	100
St. Vincent De Paul Hospital	260		
St. Lawrence College St. Laurent	250	Selkirk Metalbestos	80

3M Canada	250	Abbott Laboratories/Ross Nutritional Products	77
Corp. of the City of Brockville	197	Recorder and Times	60

Source: Kingston Economic Development Corporation Business Guide, 1998.; County of Lennox and Addington Economic Development Office, 2000.; Brockville Economic Development Office, www.brockville.com/Industrydir.html , Feb. 2000. Paul Blais, L&A Economic Development Manager.

Appendix E.

Employment by Standard Industrial Classification Divisions (SIC 1980 ^a) for Frontenac, Leeds and Grenville, Lennox and Addington, and Study Area ^b, 1996.

SIC Division and Industrial Sector Description	Frontenac County		Leeds County		Grenville County		Lennox and Addington County		Study Area	
	Number of Jobs	Percent	Number of Jobs	Percent	Number of Jobs	Percent	Number of Jobs	Percent	Number of Jobs	Percent
Division A - Agricultural and related services	1090	1.62%	1380	4.50%	935	5.54%	920	5.00%	4325	3.24%
Division B - Fishing and trapping	25	0.04%	0	0.00%	0	0.00%	0	0.00%	25	0.02%
Division C - Logging and forestry	105	0.16%	65	0.21%	45	0.27%	35	0.19%	250	0.19%
Division D - Mining (incl. milling), quarrying & oil	60	0.09%	60	0.20%	55	0.33%	0	0.00%	175	0.13%
Division E - Manufacturing	5275	7.82%	6425	20.95%	3160	18.71%	2285	12.43%	17145	12.86%
Division F - Construction	3890	5.77%	1830	5.97%	1240	7.34%	1395	7.59%	8355	6.26%
Division G - Transportation and storage	1835	2.72%	1080	3.52%	740	4.38%	900	4.89%	4555	3.42%
Division H - Communication and other utility	1555	2.31%	630	2.05%	260	1.54%	520	2.83%	2965	2.22%
Division I - Wholesale trade	2005	2.97%	1125	3.67%	800	4.74%	670	3.64%	4600	3.45%
Division J - Retail trade	8610	12.77%	4350	14.18%	2050	12.14%	2820	15.33%	17830	13.37%
Division K - Finance and insurance	1630	2.42%	545	1.78%	190	1.12%	460	2.50%	2825	2.12%
Division L - Real estate and insurance	1190	1.77%	425	1.39%	270	1.60%	250	1.36%	2135	1.60%
Division M - Business service industries	3495	5.18%	1045	3.41%	895	5.30%	725	3.94%	6160	4.62%
Division N - Government service industries	8450	12.53%	1630	5.31%	1615	9.56%	1385	7.53%	13080	9.81%
Division O - Educational service industries	8660	12.85%	1755	5.72%	845	5.00%	1380	7.50%	12640	9.48%
Division P - Health and social service industries	9470	14.05%	3495	11.39%	1745	10.33%	2120	11.53%	16830	12.62%
Division Q - Accommodation, food and beverage	5400	8.01%	2655	8.66%	970	5.74%	1225	6.66%	10250	7.69%
Division R - Other service industries	4670	6.93%	2180	7.11%	1070	6.34%	1300	7.07%	9220	6.91%
Total All Divisions	67415		30675		16890		18390		133370	

^a The SIC divisions refer to the Standard Industrial Classification (1980) system which categorizes the Canadian economy into different productive (industrial) categories or classifications. At the greatest level of aggregation the economy is divided into 18 divisions.

^b Study Area includes counties of Frontenac, Leeds and Grenville and Lennox and Addington.

Source: Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions.

Appendix F.

Employment and Employment Change by Standard Industrial Classification Divisions (SIC 1980) for Frontenac, and Lennox and Addington County 1991-1996.

SIC Division and Industrial Sector Description	Frontenac County				Lennox and Addington County			
	1991	1996	Change	% Change 1991-96	1991	1996	Change	% Change 1991-96
Division A - Agricultural and related service industries	1070	1090	20	1.87%	970	920	-50	-5.15%
Division B - Fishing and trapping industries	25	25	0	0.00%	15	0	-15	-100.00%
Division C - Logging and forestry industries	45	105	60	133.33%	40	35	-5	-12.50%
Division D - Mining (incl. milling), quarrying and oil	150	60	-90	-60.00%	35	0	-35	-100.00%
Division E - Manufacturing industries	5765	5275	-490	-8.50%	2450	2285	-165	-6.73%
Division F - Construction industries	4620	3890	-730	-15.80%	1820	1395	-425	-23.35%
Division G - Transportation and storage industries	1745	1835	90	5.16%	715	900	185	25.87%
Division H - Communication and other utility industries	1795	1555	-240	-13.37%	580	520	-60	-10.34%
Division I - Wholesale trade industries	1735	2005	270	15.56%	460	670	210	45.65%
Division J - Retail trade industries	8360	8610	250	2.99%	2590	2820	230	8.88%
Division K - Finance and insurance industries	1850	1630	-220	-11.89%	525	460	-65	-12.38%
Division L - Real estate and insurance	1000	1190	190	19.00%	180	250	70	38.89%
Division M - Business service industries	2985	3495	510	17.09%	725	725	0	0.00%
Division N - Government service industries	9850	8450	-1400	-14.21%	1810	1385	-425	-23.48%
Division O - Educational service industries	9150	8660	-490	-5.36%	1455	1380	-75	-5.15%
Division P - Health and social service industries	8755	9470	715	8.17%	1820	2120	300	16.48%
Division Q - Accommodation, food and beverage services	5475	5400	-75	-1.37%	1145	1225	80	6.99%
Division R - Other service industries	4670	4670	0	0.00%	1100	1300	200	18.18%
Total All Divisions	69045	67415	-1630	-2.36%	18435	18390	-45	-0.24%

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Appendix F (cont.).

Employment and Employment Change by Standard Industrial Classification Divisions (SIC 1980) for Leeds and Grenville County 1991-1996.

SIC Division and Industrial Sector Description	Leeds County				Grenville County			
	1991	1996	Change	% Change 1991-96	1991	1996	Change	% Change 1991-96
Division A - Agricultural and related service industries	1480	1380	-100	-6.76%	875	935	60	6.86%
Division B - Fishing and trapping industries	20	0	-20	-100.00%	0	0	0	0.00%
Division C - Logging and forestry industries	45	65	20	44.44%	30	45	15	50.00%
Division D - Mining (incl. milling), quarrying and oil	30	60	30	100.00%	75	55	-20	-26.67%
Division E - Manufacturing industries	5635	6425	790	14.02%	2785	3160	375	13.46%
Division F - Construction industries	2030	1830	-200	-9.85%	1365	1240	-125	-9.16%
Division G - Transportation and storage industries	1030	1080	50	4.85%	595	740	145	24.37%
Division H - Communication and other utility industries	855	630	-225	-26.32%	465	260	-205	-44.09%
Division I - Wholesale trade industries	960	1125	165	17.19%	540	800	260	48.15%
Division J - Retail trade industries	4055	4350	295	7.27%	2080	2050	-30	-1.44%
Division K - Finance and insurance industries	610	545	-65	-10.66%	270	190	-80	-29.63%
Division L - Real estate and insurance industries	380	425	45	11.84%	220	270	50	22.73%
Division M - Business service industries	1125	1045	-80	-7.11%	770	895	125	16.23%
Division N - Government service industries	2455	1630	-825	-33.60%	1765	1615	-150	-8.50%
Division O - Educational service industries	1960	1755	-205	-10.46%	925	845	-80	-8.65%
Division P - Health and social service industries	3510	3495	-15	-0.43%	1430	1745	315	22.03%
Division Q - Accommodation, food and beverage services	2170	2655	485	22.35%	805	970	165	20.50%
Division R - Other service industries	2070	2180	110	5.31%	835	1070	235	28.14%
Total All Divisions	30420	30675	255	0.84%	15830	16890	1060	6.70%

Source: Statistics Canada, 1996 Profile of Census Divisions and Subdivisions & 1991 Profile of Census Divisions and Subdivisions - Part B.

Appendix G.

Total Number of Farms, Total Farmland Area, and Average Farm Size by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

	1991	1996	% change	1991	1996	% change	1991	1996
	Total # of farms			Total farmland (acres)			Average farm size (acres)	
Frontenac County	733	823	12.28%	203967	216653	6.22%	278.26	263.25
Wolfe Island	77	88	14.29%	26760	26008	-2.81%	347.53	295.55
Pittsburgh	114	138	21.05%	27187	29967	10.23%	238.48	217.15
Kingston	102	99	-2.94%	19266	18010	-6.52%	188.88	181.92
Storrington	84	104	23.81%	23219	25252	8.76%	276.42	242.81
Louborough	61	86	40.98%	15671	17612	12.39%	256.90	204.79
Portland	120	127	5.83%	30152	31958	5.99%	251.27	251.64
Hinchinbrooke	45	58	28.89%	16271	19709	21.13%	361.58	339.81
Bedford	44	42	-4.55%	13681	17712	29.46%	310.93	421.71
Oso	21	24	14.29%	8714	11559	32.65%	414.95	481.63
Olden	39	31	-20.51%	13068	12068	-7.65%	335.08	389.29
Clarendon and Miller	26	26	0.00%	9978	6780	-32.05%	383.77	260.77

	1991	1996	% change	1991	1996	% change	1991	1996
	Total # of farms			Total farmland (acres)			Average farm size (acres)	
Lennox and Addington County	726	753	3.72%	198449	209434	5.54%	273.35	278.13
Amherst Island	38	25	-34.21%	10488	8677	-17.27%	276.00	347.08
Ernestown	171	158	-7.60%	33571	36584	8.98%	196.32	231.54
South Fredericksburgh	67	63	-5.97%	17819	17174	-3.62%	265.96	272.60
Adolphustown	22	20	-9.09%	7391	7370	-0.28%	335.95	368.50
North Fredericksburgh	54	56	3.70%	12117	14563	20.19%	224.39	260.05
Richmond	99	121	22.22%	30781	33166	7.75%	310.92	274.10
Camden East	195	213	9.23%	59322	58956	-0.62%	304.22	276.79
Sheffield	49	67	36.73%	18135	23727	30.84%	370.10	354.13
Kaladar, Anglesea & Effingham	31	30	-3.23%	8825	9217	4.44%	284.68	307.23

Source:1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix G (cont.).

Total Number of Farms, Total Farmland Area, and Average Farm Size by Township for the Counties of Leeds and Grenville, 1991 - 1996.

	1991	1996	% change	1991	1996	% change	1991	1996
	Total # of farms			Total farmland (acres)			Average farm size (acres)	
Leeds County	856	904	5.61%	223364	235494	5.43%	260.94	260.50
Elizabethtown	152	159	4.61%	37196	35433	-4.74%	244.71	222.85
Front of Yonge	52	53	1.92%	11875	12478	5.08%	228.37	235.43
Front of Escott	44	54	22.73%	10561	10527	-0.32%	240.02	194.94
Front of Leeds and Lansdowne	143	125	-12.59%	33731	34212	1.43%	235.88	273.70
Rear of Leeds and Lansdowne	73	83	13.70%	18069	20537	13.66%	247.52	247.43
South Crosby	47	62	31.91%	15618	18534	18.67%	332.30	298.94
North Crosby	55	53	-3.64%	19524	21317	9.18%	354.98	402.21
Bastard and South Burgess	112	121	8.04%	32091	34512	7.54%	286.53	285.22
Rear of Yonge and Escott	46	57	23.91%	12628	15566	23.27%	274.52	273.09
Kitley	94	95	1.06%	22185	23489	5.88%	236.01	247.25
South Elmsley	38	42	10.53%	9886	8889	-10.08%	260.16	211.64

	1991	1996	% change	1991	1996	% change	1991	1996
	Total # of farms			Total farmland (acres)			Average farm size (acres)	
Grenville County	636	589	-7.39%	120096	106946	-10.95%	188.83	181.57
Edwardsburgh	149	158	6.04%	29823	28508	-4.41%	200.15	180.43
Augusta	186	142	-23.66%	38365	30091	-21.57%	206.26	211.91
Wolford	79	62	-21.52%	17851	17123	-4.08%	225.96	276.18
Oxford-on-Rideau	152	156	2.63%	23782	22760	-4.30%	156.46	145.90
South Gower	70	71	1.43%	10275	8464	-17.63%	146.79	119.21

Source:1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix H.

Total Land Area, Farm Land Area as a Percentage of Total Land Area, Land Area in Crops, Percentage of Farm Land in Crops, Crop Land Area as a Percentage of Total Land Area by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996.

	Total land area (acres)	Farm land area as % of total land area, '96	1991 Land in crops (acres)	1996 Land in crops (acres)	% change	1991 % of farmland in crops	1996 % of farmland in crops	Crop land area as % of total land area, '96
Frontenac County	943868	22.95%	72302	75800	4.84%	35.45%	34.99%	8.03%
Wolfe Island	42230	61.59%	14831	13934	-6.05%	55.42%	53.58%	33.00%
Pittsburgh	51472	58.22%	13220	13225	0.04%	48.63%	44.13%	25.69%
Kingston	51620	34.89%	8510	7898	-7.19%	44.17%	43.85%	15.30%
Storrington	58663	43.05%	10566	11564	9.45%	45.51%	45.79%	19.71%
Louborough	52386	33.62%	5994	6181	3.12%	38.25%	35.10%	11.80%
Portland	54215	58.95%	10057	11518	14.53%	33.35%	36.04%	21.25%
Hinchinbrooke	70870	27.81%	3413	3958	15.97%	20.98%	20.08%	5.58%
Bedford	75713	23.39%	2823	4277	51.51%	20.63%	24.15%	5.65%
Oso	177668	6.51%	806	964	19.60%	9.25%	8.34%	0.54%
Olden	66471	18.16%	1336	1605	20.13%	10.22%	13.30%	2.41%
Clarendon and Miller	235269	2.88%	746	676	-9.38%	7.48%	9.97%	0.29%
Total township land area (excluding cities, towns, villages, etc.) = 936577 acres or 99.23% of the total land area of the county.								

	Total land area (acres)	Farm land area as % of total land area, '96	1991 Land in crops (acres)	1996 Land in crops (acres)	% change	1991 % of farmland in crops	1996 % of farmland in crops	Crop land area as % of total land area, '96
Lennox & Addington County	701952	29.84%	84178	86989	3.34%	42.42%	41.54%	12.39%
Amherst Island	16680	52.02%	5165	4848	-6.14%	49.25%	55.87%	29.06%
Ernestown	65730	55.66%	14855	14302	-3.72%	44.25%	39.09%	21.76%
South Fredericksburgh	22091	77.74%	11228	11545	2.82%	63.01%	67.22%	52.26%
Adolphustown	12479	59.06%	4147	4091	-1.35%	56.11%	55.51%	32.78%
North Fredericksburgh	25155	57.89%	6928	6757	-2.47%	57.18%	46.40%	26.86%
Richmond	51942	63.85%	12483	14585	16.84%	40.55%	43.98%	28.08%
Camden East	87797	67.15%	22698	23130	1.90%	38.26%	39.23%	26.34%
Sheffield	84214	28.17%	5584	6699	19.97%	30.79%	28.23%	7.95%
Kaladar, Anglesea & Effingham	328997	2.80%	1090	1032	-5.32%	12.35%	11.20%	0.31%

Total township land area(excluding cities, towns, villages, etc.) = 695085 acres or 99.02% of the total land area of the county.

Source:1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix H (cont).

Total Land Area, Farm Land Area as a Percentage of Total Land Area, Land Area in Crops, Percentage of Farm Land in Crops, Crop Land Area as a Percentage of Total Land Area by Township for the Counties of Leeds and Grenville, 1991 - 1996.

	Total land area (acres)	Farm land area as % of total land area, '96	1991 Land in crops (acres)	1996 Land in crops (acres)	% change	1991 % of farmland in crops	1996 % of farmland in crops	Crop land area as % of total land area, '96
Leeds County	542323	43.42%	85786	90659	5.68%	38.41%	38.50%	16.72%
Elizabethtown	82286	43.06%	16163	15405	-4.69%	43.45%	43.48%	18.72%
Front of Yonge	32470	38.43%	5346	5676	6.17%	45.02%	45.49%	17.48%
Front of Escott	27997	37.60%	3784	3803	0.50%	35.83%	36.13%	13.58%
Front of Leeds & Lansdowne	70820	48.31%	16086	15996	-0.56%	47.69%	46.76%	22.59%
Rear of Leeds & Lansdowne	52979	38.76%	7739	8565	10.67%	42.83%	41.71%	16.17%
South Crosby	43021	43.08%	5282	5915	11.98%	33.82%	31.91%	13.75%
North Crosby	47247	45.12%	4348	4780	9.94%	22.27%	22.42%	10.12%
Bastard and South Burgess	65854	52.41%	10813	10670	-1.32%	33.69%	30.92%	16.20%
Rear of Yonge and Escott	30345	51.30%	5851	7452	27.36%	46.33%	47.87%	24.56%
Kitley	55969	41.97%	7086	8865	25.11%	31.94%	37.74%	15.84%
South Elmsley	24340	36.52%	3288	3532	7.42%	33.26%	39.73%	14.51%
Total township land area (excluding cities, towns, villages, etc.) = 533328 acres or 98.34% of the total land area of the county.								

	Total land area (acres)	Farm land area as % of total land area, '96	1991 Land in crops (acres)	1996 Land in crops (acres)	% change	1991 % of farmland in crops	1996 % of farmland in crops	Crop land area as % of total land area, '96
Grenville County	295414	36.20%	54429	49322	-9.38%	45.32%	46.12%	16.70%
Edwardsburgh	76306	37.36%	14262	14292	0.21%	47.82%	50.13%	18.73%
Augusta	77690	38.73%	16364	13671	-16.46%	42.65%	45.43%	17.60%
Wolford	52164	32.83%	6662	5903	-11.39%	37.32%	34.47%	11.32%
Oxford-on-Rideau	64099	35.51%	11633	10556	-9.26%	48.92%	46.38%	16.47%
South Gower	21943	38.57%	5508	4900	-11.04%	53.61%	57.89%	22.33%
Total township land area (excluding cities, towns, villages, etc.) = 292202 acres or 98.91% of the total land area of the county.								

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I.; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix I.

Number of Jobs in Agriculture, Number of Acres of Farm Land & Crop Land per Job in Agriculture by Township for the Counties of Frontenac, and Lennox and Addington, 1991 and 1996.

	1991 Number of jobs in agriculture	1996 Number of jobs in agriculture	Percent change	1991 Number of acres of farm land per job in agri.	1996 Number of acres of farm land per job in agri.	Percent change	1991 Number of acres of crop land per job in agri.	1996 Number of acres of crop land per job in agri.	Percent change
Frontenac County	1070	1090	1.87%	190.62	198.76	4.27%	67.57	69.54	2.91%
Wolfe Island	140	145	3.57%	191.14	179.37	-6.16%	105.94	96.10	-9.29%
Pittsburgh	150	190	26.67%	181.25	157.72	-12.98%	88.13	69.61	-21.02%
Kingston	230	230	0.00%	83.77	78.30	-6.52%	37.00	34.34	-7.19%
Storrington	70	70	0.00%	331.70	360.74	8.76%	150.94	165.20	9.45%
Louborough	85	100	17.65%	184.36	176.12	-4.47%	70.52	61.81	-12.35%
Portland	120	105	-12.50%	251.27	304.36	21.13%	83.81	109.70	30.89%
Hinchinbrooke	40	25	-37.50%	406.78	788.36	93.81%	85.33	158.32	85.55%
Bedford	45	45	0.00%	304.02	393.60	29.46%	62.73	95.04	51.51%
Oso	15	10	-33.33%	580.93	1155.90	98.97%	53.73	96.40	79.40%
Olden	35	45	28.57%	373.37	268.18	-28.17%	38.17	35.67	-6.56%
Clarendon and Miller	26	26	0.00%	383.77	260.77	-32.05%	28.69	26.00	-9.38%

120 agri jobs recorded in Kingston City (1991).

100 agri jobs recorded in Kingston City (1996).

	1991 Number of jobs in agriculture	1996 Number of jobs in agriculture	Percent change	1991 Number of acres of farm land per job in agri.	1996 Number of acres of farm land per job in agri.	Percent change	1991 Number of acres of crop land per job in agri.	1996 Number of acres of crop land per job in agri.	Percent change
Lennox and Addington County	970	920	-5.15%	204.59	227.65	11.27%	86.78	94.55	1.26%
Amherst Island	40	35	-12.50%	262.20	247.91	-5.45%	129.13	138.51	0.83%
Ernestown	185	170	-8.11%	181.46	215.20	18.59%	80.30	84.13	1.30%
South Fredericksburgh	110	140	27.27%	161.99	122.67	-24.27%	102.07	82.46	0.79%
Adolphustown	25	30	20.00%	295.64	245.67	-16.90%	165.88	136.37	0.50%
North Fredericksburgh	90	125	38.89%	134.63	116.50	-13.47%	76.98	54.06	0.91%
Richmond	155	120	-22.58%	198.59	276.38	39.17%	80.54	121.54	1.87%
Camden East	215	175	-18.60%	275.92	336.89	22.10%	105.57	132.17	1.19%
Sheffield	65	65	0.00%	279.00	365.03	30.84%	85.91	103.06	1.40%
Kaladar, Anglesea & Effingham	25	10	-60.00%	353.00	921.70	161.10%	43.60	103.20	5.43%

35 agri jobs recorded in Napanee, 15 in Newburgh (1991).

20 agri jobs recorded in Napanee, 30 in Newburgh (1996).

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I.; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix I (cont.).

Number of Jobs in Agriculture, Number of Acres of Farm Land & Crop Land per Job in Agriculture by Township for the Counties of Leeds and Grenville, 1991 and 1996.

	1991 Number of jobs in agriculture	1996 Number of jobs in agriculture	Percent change	1991 Number of acres of farm land per job in agri.	1996 Number of acres of farm land per job in agri.	Percent change	1991 Number of acres of crop land per job in agri.	1996 Number of acres of crop land per job in agri.	Percent change
Leeds County	1480	1380	-6.76%	150.92	170.65	13.07%	57.96	65.69	13.34%
Elizabethtown	340	240	-29.41%	109.40	147.64	34.95%	47.54	64.19	35.02%
Front of Yonge	65	155	138.46%	182.69	80.50	-55.94%	82.25	36.62	-55.48%
Front of Escott	40	45	12.50%	264.03	233.93	-11.40%	94.60	84.51	-10.66%
Front of Leeds and Lansdowne	175	135	-22.86%	192.75	253.42	31.48%	91.92	118.49	28.90%
Rear of Leeds and Lansdowne	155	110	-29.03%	116.57	186.70	60.16%	49.93	77.86	55.95%
South Crosby	70	110	57.14%	223.11	168.49	-24.48%	75.46	53.77	-28.74%
North Crosby	85	70	-17.65%	229.69	304.53	32.58%	51.15	68.29	33.49%
Bastard and South Burgess	145	130	-10.34%	221.32	265.48	19.95%	74.57	82.08	10.06%
Rear of Yonge and Escott	100	95	-5.00%	126.28	163.85	29.75%	58.51	78.44	34.07%
Kitley	70	65	-7.14%	316.93	361.37	14.02%	101.23	136.38	34.73%
South Elmsley	80	95	18.75%	123.58	93.57	-24.28%	41.10	37.18	-9.54%
110 agri jobs recorded in Brockville, 35 in Gananoque, 10 in Newboro (1991).									
105 agri jobs recorded in Brockville, 15 in Gananoque, 10 in Newboro (1996).									

	1991 Number of jobs in agriculture	1996 Number of jobs in agriculture	Percent change	1991 Number of acres of farm land per job in agri.	1996 Number of acres of farm land per job in agri.	Percent change	1991 Number of acres of crop land per job in agri.	1996 Number of acres of crop land per job in agri.	Percent change
Grenville County	875	935	6.86%	137.25	114.38	-16.66%	62.20	52.75	1.36%
Edwardsburgh	250	175	-30.00%	119.29	162.90	36.56%	57.05	81.67	2.51%
Augusta	175	225	28.57%	219.23	133.74	-39.00%	93.51	60.76	0.69%
Wolford	55	110	100.00%	324.56	155.66	-52.04%	121.13	53.66	0.37%
Oxford-on-Rideau	235	245	4.26%	101.20	92.90	-8.20%	49.50	43.09	1.76%
South Gower	95	115	21.05%	108.16	73.60	-31.95%	57.98	42.61	1.27%
25 agri jobs recorded in Prescott, 40 in Kemptville (1991).									
45 agri jobs recorded in Prescott, 10 in Kemptville, 10 in Merrickville (1996).									

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix J.

Total Farm Gate Receipts, Farm Gate Receipts per Farm, Farm Gate Receipts per Acre of Farm Land, Farm Gate Receipts per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996. ^a

	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change
	Farm receipts (\$)			Farm receipts per farm (\$)			Farm receipts per acre of farmland (\$)			Farm receipts per acre of crop land (\$)		
Frontenac County	34647560	35259412	1.77%	47268	42843	-9.36%	170	163	-4.19%	479	465	-2.93%
Wolfe Island	4573099	4979292	8.88%	59391	56583	-4.73%	171	191	12.03%	308	357	15.89%
Pittsburgh	12318006	10401042	-15.56%	108053	75370	-30.25%	453	347	-23.40%	932	786	-15.59%
Kingston	3926975	4754601	21.08%	38500	48026	24.74%	204	264	29.52%	461	602	30.46%
Storrington	5697924	6131186	7.60%	67832	58954	-13.09%	245	243	-1.06%	539	530	-1.68%
Loudborough	1892052	2347755	24.09%	31017	27299	-11.99%	121	133	10.41%	316	380	20.33%
Portland	3547430	3961382	11.67%	29562	31192	5.51%	118	124	5.36%	353	344	-2.50%
Hinchinbrooke	750209	698921	-6.84%	16671	12050	-27.72%	46	35	-23.09%	220	177	-19.66%
Bedford	956226	960499	0.45%	21732	22869	5.23%	70	54	-22.41%	339	225	-33.70%
Oso	272265	414346	52.18%	12965	17264	33.16%	31	36	14.73%	338	430	27.24%
Olden	365042	421478	15.46%	9360	13596	45.26%	28	35	25.03%	273	263	-3.89%
Clarendon and Miller	348332	188910	-45.77%	13397	7266	-45.77%	35	28	-20.19%	467	279	-40.15%

	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change
	Farm receipts (\$)			Farm receipts per farm (\$)			Farm receipts per acre of farmland (\$)			Farm receipts per acre of crop land (\$)		
Lennox & Addington County	41795937	43474761	4.02%	57570	57735	0.29%	211	208	-1.44%	497	500	0.66%
Amherst Island	1692802	1509670	-10.82%	44547	60387	35.56%	161	174	7.80%	328	311	-4.99%
Ernestown	5633649	5661524	0.49%	32945	35832	8.76%	168	155	-7.78%	379	396	4.38%
South Fredericksburgh	5094375	5763290	13.13%	76035	91481	20.31%	286	336	17.38%	454	499	10.02%
Adolphustown	5246685	5313659	1.28%	238486	265683	11.40%	710	721	1.57%	1265	1299	2.66%
North Fredericksburgh	3982918	3977111	-0.15%	73758	71020	-3.71%	329	273	-16.92%	575	589	2.38%
Richmond	5409331	4967742	-8.16%	54640	41056	-24.86%	176	150	-14.77%	433	341	-21.40%
Camden East	12081958	13077152	8.24%	61959	61395	-0.91%	204	222	8.91%	532	565	6.22%
Sheffield	1686071	2415625	43.27%	34410	36054	4.78%	93	102	9.50%	302	361	19.42%
Kaladar, Anglesea & Effingham	968148	788988	-18.51%	31231	26300	-15.79%	110	86	-21.97%	888	765	-13.93%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I.; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix J (cont.).

Total Farm Gate Receipts, Farm Gate Receipts per Farm, Farm Gate Receipts per Acre of Farm Land, Farm Gate Receipts per Acre of Crop Land by Township for the Counties of Leeds and Grenville, 1991 - 1996. ^a

	1991 Farm receipts (\$)	1996 Farm receipts (\$)	Percent change	1991 Farm receipts per farm (\$)	1996 Farm receipts per farm (\$)	Percent change	1991 Farm receipts per acre of farmland (\$)	1996 Farm receipts per acre of farmland (\$)	Percent change	1991 Farm receipts per acre of crop land (\$)	1996 Farm receipts per acre of crop land (\$)	Percent change
Leeds County	59178856	70869418	19.75%	69134	78395	13.40%	265	301	13.59%	690	782	13.32%
Elizabethtown	18492761	30424419	64.52%	121663	191349	57.28%	497	859	72.71%	1144	1975	72.62%
Front of Yonge	2870098	2062941	-28.12%	55194	38923	-29.48%	242	165	-31.60%	537	363	-32.30%
Front of Escott	1739714	2210678	27.07%	39539	40938	3.54%	165	210	27.48%	460	581	26.44%
Front of Leeds and Lansdowne	9670218	9595600	-0.77%	67624	76765	13.52%	287	280	-2.17%	601	600	-0.21%
Rear of Leeds and Lansdowne	5705716	5647879	-1.01%	78160	68047	-12.94%	316	275	-12.91%	737	659	-10.56%
South Crosby	2720526	3351145	23.18%	57884	54051	-6.62%	174	181	3.80%	515	567	10.00%
North Crosby	1648856	2034466	23.39%	29979	38386	28.04%	84	95	13.01%	379	426	12.24%
Bastard and South Burgess	6502333	6330344	-2.65%	58057	52317	-9.89%	203	183	-9.47%	601	593	-1.34%
Rear of Yonge and Escott	4602042	4035152	-12.32%	100044	70792	-29.24%	364	259	-28.87%	787	541	-31.16%
Kitley	3241147	3233769	-0.23%	34480	34040	-1.28%	146	138	-5.77%	457	365	-20.25%
South Elmsley	1985445	1943025	-2.14%	52249	46263	-11.46%	201	219	8.84%	604	550	-8.90%

	1991 Farm receipts (\$)	1996 Farm receipts (\$)	Percent change	1991 Farm receipts per farm (\$)	1996 Farm receipts per farm (\$)	Percent change	1991 Farm receipts per acre of farmland (\$)	1996 Farm receipts per acre of farmland (\$)	Percent change	1991 Farm receipts per acre of crop land (\$)	1996 Farm receipts per acre of crop land (\$)	Percent change
Grenville County	35840362	33727847	-5.89%	56353	57263	1.62%	298	315	5.68%	658	684	3.85%
Edwardsburgh	10912496	12429181	13.90%	73238	78666	7.41%	366	436	19.15%	765	870	13.66%
Augusta	7770735	6559913	-15.58%	41778	46197	10.58%	203	218	7.63%	475	480	1.05%
Wolford	2523356	3135418	24.26%	31941	50571	58.33%	141	183	29.54%	379	531	40.23%
Oxford-on-Rideau	11505467	9038188	-21.44%	75694	57937	-23.46%	484	397	-17.92%	989	856	-13.43%
South Gower	3128308	2565147	-18.00%	44690	36129	-19.16%	304	303	-0.46%	568	523	-7.83%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix K.

Total Farm Capital, Capital per Farm, Capital per Acre of Farm Land, Capital per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996. ^a

	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change
	Total farm capital (\$)			Capital per farm (\$/farm)			Capital per acre of farm land (\$/acre)			Capital per acre of crop land (\$/acre)		
Frontenac County	298871767	333147327	11.47%	407738	404796	-0.72%	1465	1538	4.94%	4134	4395	6.32%
Wolfe Island	48371553	37605390	-22.26%	628202	427334	-31.98%	1808	1446	-20.01%	3262	2699	-17.25%
Pittsburgh	55805613	70129599	25.67%	489523	508186	3.81%	2053	2340	14.01%	4221	5303	25.62%
Kingston	45255250	38526182	-14.87%	443679	389153	-12.29%	2349	2139	-8.93%	5318	4878	-8.27%
Storrington	40994668	52026738	26.91%	488032	500257	2.51%	1766	2060	16.69%	3880	4499	15.96%
Louborough	23119000	29503680	27.62%	379000	343066	-9.48%	1475	1675	13.55%	3857	4773	23.76%
Portland	39620882	44690338	12.79%	330174	351892	6.58%	1314	1398	6.42%	3940	3880	-1.51%
Hinchinbrooke	14187425	19076398	34.46%	315276	328903	4.32%	872	968	11.00%	4157	4820	15.95%
Bedford	11101405	13726188	23.64%	252305	326814	29.53%	811	775	-4.50%	3932	3209	-18.39%
Oso	6279433	7652226	21.86%	299021	318843	6.63%	721	662	-8.13%	7791	7938	1.89%
Olden	9897622	13160659	32.97%	253785	424537	67.28%	757	1091	43.99%	7408	8200	10.68%
Clarendon and Miller	4238916	7049928	66.31%	163035	271151	66.31%	425	1040	144.76%	5682	10429	83.54%

	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change	1991	1996	Percent change
	Total farm capital (\$)			Capital per farm (\$/farm)			Capital per acre of farm land (\$/acre)			Capital per acre of crop land (\$/acre)		
Lennox and Addington County	282309310	308901488	9.42%	388856	410228	5.50%	1423	1475	3.68%	3354	3551	5.88%
Amherst Island	12455678	12710888	2.05%	327781	508436	55.11%	1188	1465	23.35%	2412	2622	8.72%
Ernestown	53858617	58207248	8.07%	314963	368400	16.97%	1604	1591	-0.83%	3626	4070	12.25%
South Fredericksburgh	29177024	25983582	-10.95%	435478	412438	-5.29%	1637	1513	-7.60%	2599	2251	-13.39%
Adolphustown	20055720	16081132	-19.82%	911624	804057	-11.80%	2714	2182	-19.59%	4836	3931	-18.72%
North Fredericksburgh	19699580	25868044	31.31%	364807	461929	26.62%	1626	1776	9.26%	2843	3828	34.64%
Richmond	42006230	44651077	6.30%	424305	369017	-13.03%	1365	1346	-1.35%	3365	3061	-9.02%
Camden East	82263232	92698653	12.69%	421863	435205	3.16%	1387	1572	13.38%	3624	4008	10.58%
Sheffield	14512867	25381356	74.89%	296181	378826	27.90%	800	1070	33.67%	2599	3789	45.78%
Kaladar, Anglesea and	8280362	7319509	-11.60%	267108	243984	-8.66%	938	794	-15.36%	7597	7093	-6.64%

Effingham												
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^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix K (cont.).

Total Farm Capital, Capital per Farm, Capital per Acre of Farm Land, Capital per Acre of Crop Land by Township for the Counties of Leeds and Grenville, 1991 - 1996. ^a

	1991 Total farm capital (\$)	1996 Total farm capital (\$)	Percent change	1991 Capital per farm (\$/farm)	1996 Capital per farm (\$/farm)	Percent change	1991 Capital per acre of farm land (\$/acre)	1996 Capital per acre of farm land (\$/acre)	Percent change	1991 Capital per acre of crop land (\$/acre)	1996 Capital per acre of crop land (\$/acre)	Percent change
Leeds County	300060446	356380666	18.77%	350538	394226	12.46%	1343	1513	12.65%	3498	3931	12.39%
Elizabethtown	75781975	69184391	-8.71%	498566	435122	-12.73%	2037	1953	-4.16%	4689	4491	-4.21%
Front of Yonge	14763153	22111389	49.77%	283907	417196	46.95%	1243	1772	42.54%	2762	3896	41.07%
Front of Escott	11369215	14220002	25.07%	258391	263333	1.91%	1077	1351	25.48%	3005	3739	24.45%
Front of Leeds & Lansdowne	49471353	55573909	12.34%	345954	444591	28.51%	1467	1624	10.76%	3075	3474	12.97%
Rear of Leeds & Lansdowne	27501278	31083348	13.03%	376730	374498	-0.59%	1522	1514	-0.56%	3554	3629	2.13%
South Crosby	14684437	26079717	77.60%	312435	420641	34.63%	940	1407	49.66%	2780	4409	58.59%
North Crosby	14663932	27591009	88.16%	266617	520585	95.26%	751	1294	72.33%	3373	5772	71.15%
Bastard and South Burgess	34660072	42978197	24.00%	309465	355192	14.78%	1080	1245	15.30%	3205	4028	25.66%
Rear of Yonge & Escott	14982353	21716580	44.95%	325703	380993	16.98%	1186	1395	17.59%	2561	2914	13.81%
Kitley	27032152	33229262	22.92%	287576	349782	21.63%	1218	1415	16.10%	3815	3748	-1.74%
South Elmsley	15150526	12612862	-16.75%	398698	300306	-24.68%	1533	1419	-7.41%	4608	3571	-22.50%
	1991 Total farm capital (\$)	1996 Total farm capital (\$)	Percent change	1991 Capital per farm (\$/farm)	1996 Capital per farm (\$/farm)	Percent change	1991 Capital per acre of farm land (\$/acre)	1996 Capital per acre of farm land (\$/acre)	Percent change	1991 Capital per acre of crop land (\$/acre)	1996 Capital per acre of crop land (\$/acre)	Percent change
Grenville County	217811045	220550812	1.26%	342470	374450	9.34%	1814	2062	13.71%	4002	4472	11.74%
Edwardsburgh	48185621	56155491	16.54%	323393	355415	9.90%	1616	1970	21.92%	3379	3929	16.30%
Augusta	60026453	50806535	-15.36%	322723	357793	10.87%	1565	1688	7.91%	3668	3716	1.31%
Wolford	21925209	26684700	21.71%	277534	430398	55.08%	1228	1558	26.88%	3291	4521	37.36%

Oxford-on-Rideau	64965607	62064926	-4.46%	427405	397852	-6.91%	2732	2727	-0.18%	5585	5880	5.28%
South Gower	22708155	24839160	9.38%	324402	349847	7.84%	2210	2935	32.79%	4123	5069	22.96%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix L.

Total Farm Expenses, Expenses per Farm, Expenses per Acre of Farm Land, Expenses per Acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1990 - 1995. ^a

	1990	1995	Percent change	1990	1995	Percent change	1990	1995	Percent change	1990	1995	Percent change
	Total farm expenses (\$)			Expenses per farm (\$/farm)			Expenses per acre of farm land (\$/acre)			Expenses per acre of crop land (\$/acre)		
Frontenac County	30838731	32125042	4.17%	42072	39034	-7.22%	151	148	-1.93%	427	424	-0.64%
Wolfe Island	3794074	4110456	8.34%	49274	46710	-5.20%	142	158	11.47%	256	295	15.31%
Pittsburgh	11793619	9029914	-23.43%	103453	65434	-36.75%	434	301	-30.54%	892	683	-23.46%
Kingston	3196773	4411263	37.99%	31341	44558	42.17%	166	245	47.61%	376	559	48.68%
Storrington	4952958	5571521	12.49%	58964	53572	-9.14%	213	221	3.43%	469	482	2.78%
Loudborough	1564874	2151341	37.48%	25654	25016	-2.49%	100	122	22.33%	261	348	33.32%
Portland	3122874	3687101	18.07%	26024	29032	11.56%	104	115	11.40%	311	320	3.09%
Hinchinbrooke	718576	997437	38.81%	15968	17197	7.70%	44	51	14.59%	211	252	19.69%
Bedford	714818	1051227	47.06%	16246	25029	54.07%	52	59	13.59%	253	246	-2.93%
Oso	178331	383239	114.90%	8492	15968	88.04%	20	33	62.01%	221	398	79.68%
Olden	410595	489059	19.11%	10528	15776	49.85%	31	41	28.98%	307	305	-0.85%
Clarendon and Miller	391239	242484	-38.02%	15048	9326	-38.02%	39	36	-8.79%	524	359	-31.60%

	1990	1995	Percent change	1990	1995	Percent change	1990	1995	Percent change	1990	1995	Percent change
	Total farm expenses (\$)			Expenses per farm (\$/farm)			Expenses per acre of farm land (\$/acre)			Expenses per acre of crop land (\$/acre)		
Lennox and Addington County	35691846	38661399	8.32%	49162	51343	4.44%	180	185	2.64%	424	444	4.82%
Amherst Island	1344781	1361708	1.26%	35389	54468	53.91%	128	157	22.39%	260	281	7.88%
Ernestown	4656731	5149836	10.59%	27232	32594	19.69%	139	141	1.48%	313	360	14.87%
South Fredericksburgh	3910413	4668119	19.38%	58364	74097	26.96%	219	272	23.86%	348	404	16.10%
Adolphustown	5540710	5155460	-6.95%	251850	257773	2.35%	750	700	-6.69%	1336	1260	-5.68%
North Fredericksburgh	3250396	3452992	6.23%	60193	61661	2.44%	268	237	-11.61%	469	511	8.92%

Richmond	4761275	4518257	-5.10%	48094	37341	-22.36%	155	136	-11.93%	381	310	-18.78%
Camden East	9700869	11504254	18.59%	49748	54011	8.57%	164	195	19.33%	427	497	16.38%
Sheffield	1622620	2130928	31.33%	33115	31805	-3.96%	89	90	0.38%	291	318	9.47%
Kaladar, Anglesea and Effingham	904051	719845	-20.38%	29163	23995	-17.72%	102	78	-23.76%	829	698	-15.90%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix L (cont.).

Total Farm Expenses, Expenses per Farm, Expenses per Acre of Farm Land, Expenses per Acre of Crop Land by Township for the Counties of Leeds and Grenville, 1990 - 1995. ^a

	1990 Total farm expenses (\$)	1995 Total farm expenses (\$)	Percent change	1990 Expenses per farm (\$/farm)	1995 Expenses per farm (\$/farm)	Percent change	1990 Expenses per acre of farm land (\$/acre)	1995 Expenses per acre of farm land (\$/acre)	Percent change	1990 Expenses per acre of crop land (\$/acre)	1995 Expenses per acre of crop land (\$/acre)	Percent change
Leeds County	48753031	57175648	17.28%	56954	63247	11.05%	218	243	11.24%	568	631	10.97%
Elizabethtown	15451397	23495325	52.06%	101654	147769	45.37%	415	663	59.63%	956	1525	59.54%
Front of Yonge	2499748	1790284	-28.38%	48072	33779	-29.73%	211	143	-31.84%	468	315	-32.55%
Front of Escott	1385845	1852153	33.65%	31496	34299	8.90%	131	176	34.08%	366	487	32.98%
Front of Leeds	7938732	8071562	1.67%	55516	64572	16.31%	235	236	0.24%	494	505	2.25%
and Lansdowne												
Rear of Leeds	4662766	4465236	-4.24%	63874	53798	-15.77%	258	217	-15.74%	603	521	-13.47%
and Lansdowne												
South Crosby	2159266	2781430	28.81%	45942	44862	-2.35%	138	150	8.55%	409	470	15.03%
North Crosby	1387832	1704699	22.83%	25233	32164	27.47%	71	80	12.50%	319	357	11.73%
Bastard and	4978114	5081731	2.08%	44447	41998	-5.51%	155	147	-5.08%	460	476	3.45%
South Burgess												
Rear of Yonge	3838296	3583110	-6.65%	83441	62862	-24.66%	304	230	-24.27%	656	481	-26.70%
and Escott												
Kitley	2817650	2819391	0.06%	29975	29678	-0.99%	127	120	-5.49%	398	318	-20.02%
South Elmsley	1633385	1530727	-6.28%	42984	36446	-15.21%	165	172	4.23%	497	433	-12.76%

	1990 Total farm expenses (\$)	1995 Total farm expenses (\$)	Percent change	1990 Expenses per farm (\$/farm)	1995 Expenses per farm (\$/farm)	Percent change	1990 Expenses per acre of farm land (\$/acre)	1995 Expenses per acre of farm land (\$/acre)	Percent change	1990 Expenses per acre of crop land (\$/acre)	1995 Expenses per acre of crop land (\$/acre)	Percent change
Grenville County	29243555	28890703	-1.21%	45980	49050	6.68%	244	270	10.94%	537	586	9.02%
Edwardsburgh	9113950	10727280	17.70%	61167	67894	11.00%	306	376	23.13%	639	751	17.45%

Augusta	6742572	5804925	-13.91%	36250	40880	12.77%	176	193	9.77%	412	425	3.05%
Wolford	2062862	2752630	33.44%	26112	44397	70.03%	116	161	39.11%	310	466	50.59%
Oxford-on-Rideau	8822920	7468917	-15.35%	58046	47878	-17.52%	371	328	-11.55%	758	708	-6.71%
South Gower	2501251	2136951	-14.56%	35732	30098	-15.77%	243	252	3.72%	454	436	-3.96%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I.; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix M.

Net Farm Receipts, Farm Expenses as a Percentage of Farm Receipts, Net Receipts per Farm, Net Receipts per acre of Crop Land by Township for the Counties of Frontenac, and Lennox and Addington, 1991 - 1996. ^a

	1990	1995	Percent change	1990	1995	1990	1995	Percent change	1990	1995	Percent change
	Net farm receipts (\$)			Farm expenses as a % of farm receipts		Net receipts per farm			Net receipts per acre of crop land		
Frontenac County	3808829	3134370	-17.71%	89.01%	91.11%	5196	3808	-26.71%	53	41	-21.51%
Wolfe Island	779025	868836	11.53%	82.97%	82.55%	10117	9873	-2.41%	53	62	18.71%
Pittsburgh	524387	1371128	161.47%	95.74%	86.82%	4600	9936	116.00%	40	104	161.37%
Kingston	730202	343338	-52.98%	81.41%	92.78%	7159	3468	-51.56%	86	43	-49.34%
Storrington	744966	559665	-24.87%	86.93%	90.87%	8869	5381	-39.32%	71	48	-31.36%
Loudborough	327178	196414	-39.97%	82.71%	91.63%	5364	2284	-57.42%	55	32	-41.78%
Portland	424556	274281	-35.40%	88.03%	93.08%	3538	2160	-38.96%	42	24	-43.59%
Hinchinbrooke	31633	-298516	-1043.69%	95.78%	142.71%	703	-5147	-832.17%	9	-75	-913.74%
Bedford	241408	-90728	-137.58%	74.75%	109.45%	5487	-2160	-139.37%	86	-21	-124.81%
Oso	93934	31107	-66.88%	65.50%	92.49%	4473	1296	-71.02%	117	32	-72.31%
Olden	-45553	-67581	48.36%	112.48%	116.03%	-1168	-2180	86.64%	-34	-42	23.49%
Clarendon and Miller	-42907	-53574	24.86%	112.32%	128.36%	-1650	-2061	24.86%	-58	-79	37.79%

	1990	1995	Percent change	1990	1995	1990	1995	Percent change	1990	1995	Percent change
	Net farm receipts (\$)			Farm expenses as a % of farm receipts		Net receipts per farm			Net receipts per acre of crop land		
Lennox and Addington County	6104091	4813362	-21.15%	85.40%	88.93%	8408	6392	-23.97%	73	55	-23.69%
Amherst Island	348021	147962	-57.48%	79.44%	90.20%	9158	5918	-35.38%	67	31	-54.70%
Ernestown	976918	511688	-47.62%	82.66%	90.96%	5713	3239	-43.31%	66	36	-45.60%
South Fredericksburgh	1183962	1095171	-7.50%	76.76%	81.00%	17671	17384	-1.63%	105	95	-10.04%

Adolphustown	-294025	158199	-153.80%	105.60%	97.02%	-13365	7910	-159.19%	-71	39	-154.54%
North Fredericksburgh	732522	524119	-28.45%	81.61%	86.82%	13565	9359	-31.01%	106	78	-26.64%
Richmond	648056	449485	-30.64%	88.02%	90.95%	6546	3715	-43.25%	52	31	-40.64%
Camden East	2381089	1572898	-33.94%	80.29%	87.97%	12211	7384	-39.52%	105	68	-35.18%
Sheffield	63451	284697	348.69%	96.24%	88.21%	1295	4249	228.14%	11	42	274.01%
Kaladar, Anglesea and Effingham	64097	69143	7.87%	93.38%	91.24%	2068	2305	11.47%	59	67	13.94%

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix M (cont.).

Net Farm Receipts, Farm Expenses as a Percentage of Farm Receipts, Net Receipts per Farm, Net Receipts per acre of Crop Land by Township for the Counties of Leeds and Grenville, 1991 - 1996. ^a

	1990 Net farm receipts (\$)	1995	Percent change	1990 Farm expenses as a % of farm receipts	1995	1990 Net receipts per farm	1995	Percent change	1990 Net receipts per acre of crop land	1995	Percent change
Leeds County	10425825	13693770	31.34%	82.38%	80.68%	12180	15148	24.37%	122	151	24.28%
Elizabethtown	3041364	6929094	127.83%	83.55%	77.23%	20009	43579	117.80%	188	450	139.04%
Front of Yonge	370350	272657	-26.38%	87.10%	86.78%	7122	5144	-27.77%	69	48	-30.66%
Front of Escott	353869	358525	1.32%	79.66%	83.78%	8042	6639	-17.45%	94	94	0.81%
Front of Leeds and Lansdowne	1731486	1524038	-11.98%	82.09%	84.12%	12108	12192	0.69%	108	95	-11.49%
Rear of Leeds and Lansdowne	1042950	1182643	13.39%	81.72%	79.06%	14287	14249	-0.27%	135	138	2.46%
South Crosby	561260	569715	1.51%	79.37%	83.00%	11942	9189	-23.05%	106	96	-9.36%
North Crosby	261024	329767	26.34%	84.17%	83.79%	4746	6222	31.10%	60	69	14.92%
Bastard and South Burgess	1524219	1248613	-18.08%	76.56%	80.28%	13609	10319	-24.17%	141	117	-16.98%
Rear of Yonge and Escott	763746	452042	-40.81%	83.40%	88.80%	16603	7931	-52.23%	131	61	-53.53%
Kitley	423497	414378	-2.15%	86.93%	87.19%	4505	4362	-3.18%	60	47	-21.79%
South Elmsley	352060	412298	17.11%	82.27%	78.78%	9265	9817	5.96%	107	117	9.02%

	1990 Net farm receipts (\$)	1995	Percent change	1990 Farm expenses as a % of farm receipts	1995	1990 Net receipts per farm	1995	Percent change	1990 Net rece acre of c
Grenville County	6596807	4837144	-26.67%	81.59%	85.66%	10372	8212	-20.82%	121
Edwardsburgh	1798546	1701901	-5.37%	83.52%	86.31%	12071	10772	-10.76%	126
Augusta	1028163	754988	-26.57%	86.77%	88.49%	5528	5317	-3.82%	63
Wolford	460494	382788	-16.87%	81.75%	87.79%	5829	6174	5.92%	69
Oxford-on-Rideau	2682547	1569271	-41.50%	76.68%	82.64%	17648	10059	-43.00%	231
South Gower	627057	428196	-31.71%	79.96%	83.31%	8958	6031	-32.68%	114

^a Based on farms reporting farm gate sales of \$2,500 or more.

Source: 1991 Statistics Canada. Agricultural Profile of Ontario. Part I. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix N.

Farm Operator Average Age by Township for the Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, 1991 - 1996.

	Average age		Average age
Frontenac	51.0	Lennox and Addington	50.5
Wolf Island	51.3	Amherst Island	49.3
Pittsburgh	50.6	Ernestown	51
Kingston	52.0	South Fredericksburgh	49.7
Storrington	50.1	Adolphustown	48.4
Louborough	50.2	North Fredericksburgh	52.1
Portland	50.1	Richmond	51.8
Hinchinbrooke	50.9	Camden East	48.8
Bedford	50.7	Sheffield	52.5
Oso	58.5	Kaladar, Anglesea and Effingham	53.0
Olden	53.2		
Clarendon and Miller	50.8		
Leeds	51	Grenville	50.5
Elizabethtown	50.2	Edwardsburgh	48.8
Front of Yonge	52.4	Augusta	50.3
Front of Escott	50.6	Wolford	52.6
Front of Leeds and Lansdowne	49.4	Oxford-on-Rideau	52.2
Rear of Leeds and Lansdowne	50.5	South Gower	48.8
South Crosby	50.5		
North Crosby	50.1		
Bastard and South Burgess	51.1		
Rear of Yonge and Escott	50.3		
Kitley	52.1		
South Elmsley	53.3		

Source: 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix O.

Farm Operating Arrangements for the Counties of Frontenac, Leeds, Grenville, and Lennox and Addington, Eastern Ontario, Ontario, 1981^a, 1986, 1991^b and 1996^c.

1981	Frontenac County	Leeds & Grenville United Counties	Lennox and Addington County	Study Area	Eastern Ontario	Ontario
Number of Farms						
Total number of farms	952	1854	897	3703	12905	82448
Sole proprietorship	813	1587	785	3185	11053	68410
Percent	85.40%	85.60%	87.51%	86.01%	85.65%	82.97%
Partnership	121	234	98	453	1593	10820
Percent	12.71%	12.62%	10.93%	12.23%	12.34%	13.12%
Corporation	16	31	14	61	241	3118
Percent	1.68%	1.67%	1.56%	1.65%	1.87%	3.78%
Other	2	2	0	4	18	100
Percent	0.21%	0.11%	0.00%	0.11%	0.14%	0.12%

1986	Frontenac County	Leeds County	Grenville County	Lennox & Addington County	Study Area	Eastern Ontario	Ontario
Number of Farms							
Total number of farms	861	943	603	761	3168	11136	72713
Sole proprietorship	709	733	502	618	2562	8951	56708
Percent	82.35%	77.73%	83.25%	81.21%	80.87%	80.38%	77.99%
Partnership	130	177	79	125	511	1814	11684
Percent	15.10%	18.77%	13.10%	16.43%	16.13%	16.29%	16.07%
Corporation	19	29	22	16	86	346	5192
Percent	2.21%	3.08%	3.65%	2.10%	2.71%	3.11%	7.14%
Other	3	4	0	2	9	25	129
Percent	0.35%	0.42%	0.00%	0.26%	0.28%	0.22%	0.18%

1991	Frontenac County	Leeds & Grenville United Counties	Lennox & Addington County	Study Area	Eastern Ontario	Ontario
Number of Farms						
Total number of farms	733	1492	726	2951	10655	68633
Sole proprietorship	437	855	456	1748	6251	38916
Percent	59.62%	57.31%	62.81%	59.23%	58.67%	56.70%
Partnership	267	546	230	1043	3755	23725
Percent	36.43%	36.60%	31.68%	35.34%	35.24%	34.57%
Corporation	27	84	36	147	601	5641
Percent	3.68%	5.63%	4.96%	4.98%	5.64%	8.22%
Other	2	7	4	13	48	351
Percent	0.27%	0.47%	0.55%	0.44%	0.45%	0.51%

Appendix O (cont.)

1996	Frontenac County	Leeds County	Grenville County	Lennox & Addington County	Study Area	Eastern Ontario	Ontario
Number of Farms							
Total number of farms	823	904	589	753	3069	10473	67520
Sole proprietorship	517	537	351	467	1872	6191	38465
Percent	62.82%	59.40%	59.59%	62.02%	61.00%	59.11%	56.97%
% change 1986-1996	-27.08%	-26.74%	-30.08%	-24.43%	-26.93%	-30.83%	-32.17%
Partnership	253	309	192	235	989	3416	21076
Percent	30.74%	34.18%	32.60%	31.21%	32.23%	32.62%	31.21%
% change 1986-1996	94.62%	74.58%	143.04%	88.00%	93.54%	88.31%	80.38%
Corporation	51	58	44	51	204	852	7909
Percent	6.20%	6.42%	7.47%	6.77%	6.65%	8.14%	11.71%
% change 1986-1996	168.42%	100.00%	100.00%	218.75%	137.21%	146.24%	52.33%
Other	2	0	2	0	4	14	70
Percent	0.24%	0.00%	0.34%	0.00%	0.13%	0.13%	0.10%
% change 1986-1996	-33.33%	-100.00%	200.00%	-100.00%	-55.56%	-44.00%	-45.74%

^a Separate data not available for Leeds and Grenville from 1981 agriculture census

^b Separate data not available for Leeds and Grenville from 1991 agriculture census.

^c In the past, individual family holdings (sole proprietorship) were being over-reported. Changes introduced in the 1996 census questionnaire contributed to an increase in the number of operations that were reported as being legally incorporated compared with previous censuses. .

Source: Statistics Canada 1981 Census of Agriculture Canada, Ontario; 1986 Agricultural Profile of Ontario; 1991 Agricultural Profile of Ontario - Part 1; 1996 Agricultural Profile of Ontario.

Appendix P.

Number of Farms ^{ab} by Major Products ^c for Frontenac, Leeds, Grenville, and Lennox and Addington, 1986 and 1991.

1986	Total # of farms	Dairy	Beef	Hog	Poultry & Egg	Wheat	Grain & oilseed	Field crops	Fruit	Veg.	Misc. Spec.	Livestock combo.	Other combo.
Frontenac County	626	189	324	5	2	3	12	4	5	5	52	6	20
% of farms in the county	100%	30.19%	51.76%	0.80%	0.32%	0.48%	1.92%	0.64%	0.80%	0.80%	8.31%	0.96%	3.19%
Leeds County	748	307	293	13	7	1	34	8	5	3	42	6	29
% of farms in the county	100%	41.04%	39.17%	1.74%	0.94%	0.13%	4.55%	1.07%	0.67%	0.40%	5.61%	0.80%	3.88%
Grenville County	435	123	155	14	12	1	45	1	12	7	42	4	19
% of farms in the county	100%	28.28%	35.63%	3.22%	2.76%	0.23%	10.34%	0.23%	2.76%	1.61%	9.66%	0.92%	4.37%
Lennox and Addington County	589	144	299	10	6	5	40	1	5	13	30	13	23
% of farms in the county	100%	24.45%	50.76%	1.70%	1.02%	0.85%	6.79%	0.17%	0.85%	2.21%	5.09%	2.21%	3.90%
1991													
Frontenac County	612	162	293	1	1	2	8	28	4	7	86	15	5
% of farms in the county	100%	26.47%	47.88%	0.16%	0.16%	0.33%	1.31%	4.58%	0.65%	1.14%	14.05%	2.45%	0.82%
Leeds County	725	264	278	14	5	1	13	30	6	6	80	22	8
% of farms in the county	100%	36.41%	38.34%	1.93%	0.69%	0.14%	1.79%	4.14%	0.83%	0.83%	11.03%	3.03%	1.10%
Grenville County	503	112	182	15	7	1	28	26	11	7	101	9	4
% of farms in the county	100%	22.27%	36.18%	2.98%	1.39%	0.20%	5.57%	5.17%	2.19%	1.39%	20.08%	1.79%	0.80%
Lennox and Addington County	607	136	294	4	8	0	15	31	2	16	76	11	14
% of farms in the county	100%	22.41%	48.43%	0.66%	1.32%	0.00%	2.47%	5.11%	0.33%	2.64%	12.52%	1.81%	2.31%

^a Farm numbers are based on farms reporting farm gate sales of \$2,500 or more. This classification is used to omit small hobby farms that might have skewed the results.

^b For the 1991 Census of Agriculture the term 'census farm' refers to a farm or ranch or other agricultural holding which produces at least one of the following products intended for sale: crops, livestock, poultry, animal products, greenhouse and nursery products, mushrooms, sod, honey or maple syrup products. Census Farms are also commonly referred to as farm operations or agricultural holdings. The 1986 census farm definition is slightly different from 1991. For 1986, the term 'census farm' refers to a farm, ranch or other agricultural holding with sales of agricultural products during the past 12 months of \$250 or more. Operations with anticipated sales of \$250 or more in 1986 were also included.

^c Poultry and Egg include broilers, pullets and pullet chicks. Grain and oilseed include oats, barley, mixed grain, grain corn, rye, canola, soybeans and sunflower. Field crops include alfalfa and alfalfa mixtures, corn and sorghum for silage, field peas, tobacco, etc. Miscellaneous specialty includes cut flowers, bulbs, shrubs, trees, sod, ornamentals, etc. Livestock combination refers to two types of livestock or more e.g. poultry and beef, dairy and swine, etc.

Source: 1986 Statistics Canada. Agriculture, Ontario. ; 1991 Statistics Canada. Agricultural Profile of Ontario. Part 1.

Appendix P (cont.).

Number of Farms ^{ab} by Major Products for Frontenac, Leeds, Grenville, and Lennox and Addington, 1996 with Percent Change for 1986-1991, 1991-1996 and 1986-1996.

1996	Total # of farms	Dairy	Beef	Hog	Poultry & Egg	Wheat	Grain & oilseed	Field crops	Fruit	Veg.	Misc. Spec.	Livestock combo.	Other combo.
Frontenac County	656	140	256	1	2	1	6	90	6	7	109	24	14
% of farms in the county	100%	21.34%	39.02%	0.15%	0.30%	0.15%	0.91%	13.72%	0.91%	1.07%	16.62%	3.66%	2.13%
% change '86 - '91	-2%	-14%	-10%	-80%	-50%	-33%	-33%	600%	-20%	40%	65%	150%	-75%
% change '91 - '96	7.19%	-13.58%	-12.63%	0.00%	100.00%	-50.00%	-25.00%	221.43%	50.00%	0.00%	26.74%	60.00%	180.00%
% change '86 - '96	4.79%	-25.93%	-20.99%	-80.00%	0.00%	-66.67%	-50.00%	2150.00%	20.00%	40.00%	109.62%	300.00%	-30.00%
Leeds County	748	221	270	6	4	0	16	84	5	4	103	18	17
% of farms in the county	100%	29.55%	36.10%	0.80%	0.53%	0.00%	2.14%	11.23%	0.67%	0.53%	13.77%	2.41%	2.27%
% change '86 - '91	-3%	-14%	-5%	8%	-29%	0%	-62%	275%	20%	100%	90%	267%	-72%
% change '91 - '96	3.17%	-16.29%	-2.88%	-57.14%	-20.00%	-100.00%	23.08%	180.00%	-16.67%	-33.33%	28.75%	-18.18%	112.50%
% change '86 - '96	0.00%	-28.01%	-7.85%	-53.85%	-42.86%	-100.00%	-52.94%	950.00%	0.00%	33.33%	145.24%	200.00%	-41.38%
Grenville County	456	69	147	8	7	0	35	49	9	3	108	9	12
% of farms in the county	100%	15.13%	32.24%	1.75%	1.54%	0.00%	7.68%	10.75%	1.97%	0.66%	23.68%	1.97%	2.63%
% change '86 - '91	16%	-9%	17%	7%	-42%	0%	-38%	2500%	-8%	0%	140%	125%	-79%
% change '91 - '96	-9.34%	-38.39%	-19.23%	-46.67%	0.00%	-100.00%	25.00%	88.46%	-18.18%	-57.14%	6.93%	0.00%	200.00%
% change '86 - '96	4.83%	-43.90%	-5.16%	-42.86%	-41.67%	-100.00%	-22.22%	4800.00%	-25.00%	-57.14%	157.14%	125.00%	-36.84%
Lennox and Addington County	599	120	244	4	11	0	21	84	6	9	70	13	17
% of farms in the county	100%	20.03%	40.73%	0.67%	1.84%	0.00%	3.51%	14.02%	1.00%	1.50%	11.69%	2.17%	2.84%
% change '86 - '91	3%	-6%	-2%	-60%	33%	-100%	-63%	3000%	-60%	23%	153%	-15%	-39%
% change '91 - '96	-1.32%	-11.76%	-17.01%	0.00%	37.50%	0.00%	40.00%	170.97%	200.00%	-43.75%	-7.89%	18.18%	21.43%
% change '86 - '96	1.70%	-16.67%	-18.39%	-60.00%	83.33%	-100.00%	-47.50%	8300.00%	20.00%	-30.77%	133.33%	0.00%	-26.09%

^a Farm numbers are based on farms reporting farm gate sales of \$2,500 or more. This classification is used to omit small hobby farms that might have skewed the results.

^b In 1996, Statistics Canada defined a census farm as an agricultural operation that produces at least one of the following products intended for sale: crops (field crops, tree fruits or nuts, berries or grapes, vegetables or seed); livestock (cattle, pigs, sheep, horses, exotic animals, etc.); poultry (hens, chickens, turkeys, exotic birds, etc.); animal products (milk or cream, eggs, wool, fur, meat); or other agricultural products (greenhouse or nursery products, Christmas trees, mushrooms, sod, honey, maple syrup products). The definition of a census farm was expanded for the 1996 Census of Agriculture to include commercial poultry hatcheries and operations that produced only Christmas trees. This expanded definition resulted in the inclusion of 138 commercial poultry hatcheries and 1,593 operations across Canada that produced only Christmas trees.

Source: 1986 Statistics Canada. Agriculture, Ontario. ; 1991 Statistics Canada. Agricultural Profile of Ontario. Part 1. ; 1996 Statistics Canada. Agricultural Profile of Ontario.

Appendix Q.

Classification Structure for Division A - Agricultural and Related Service Industries.

(Based on 1980 Standard Industrial Classification, Statistics Canada, Standards Division).

Division A - Agricultural and Related Service Industries	
Major Group 01 Agricultural Industries	Major Group 02 Service Industries Incidental to Agriculture
<i>011 - Livestock Farms (Except Animal Specialties)</i> 0111 Dairy Farms 0112 Cattle Farms 0113 Hog Farms 0114 Poultry and Egg Farms 0115 Sheep and Goat Farms 0119 Livestock Combination Farms <i>012 - Other Animal Specialty Farms</i> 0121 Honey and Other Apiary Product Farms 0122 Horse and Other Equine Farms 0123 Furs and Skins Ranch 0129 Other Animal Specialty <i>013 - Field Crop Farms</i> 0131 Wheat Farms 0132 Small Grain Farms (Except Wheat) 0133 Oilseed Farms (Except Corn) 0134 Grain Corn Farms 0135 Forage, Seed and Hay Farms 0136 Dry Field Pea and Bean Farms 0137 Tobacco Farms 0138 Potato Farms 0139 Other Field Crop Farms <i>014 - Field Crop Combination Farm</i> 0141 Field Crop Combination Farms <i>015 - Fruit and Other Vegetable Farms</i> 0151 Fruit Farms 0152 Other Vegetable Farms 0159 Fruit and Vegetable Combination Farms <i>016 - Horticultural Specialties</i> 0161 Mushrooms 0162 Greenhouse Products 0163 Nursery Products 0169 Other Horticultural Specialties <i>017 - Livestock, Field Crop and Horticultural Combination Farms</i> 0171 Livestock, Field Crop and Horticultural Combination Farms	<i>021 - Services Incidental to Livestock and Animal Specialties</i> 0211 Veterinary Services 0212 Farm Animal Breeding Services (Except Poultry) 0213 Poultry Services 0219 Other Services Incidental to Livestock and Animal Specialties. <i>022 - Services Incidental to Agricultural Crops</i> 0221 Soil Preparation, Planting, and Cultivating Services 0222 Crop Dusting Services 0223 Harvesting, Baling and Threshing Services 0229 Other Services Incidental to Agricultural Crops <i>023 - Other Services Incidental to Agriculture</i> 0231 Agricultural Management and Consulting Services 0239 Other Services Incidental to Agriculture

Appendix R.

Profile of Selected Specialty Farm Types in the Study Area, 1996.

Farm Type	Lennox and Addington	Frontenac	Leeds and Grenville
Grapes and/or Berries	17 farms covering 110 acres in six different townships in the southern part of the county. Primarily located in Richmond, North Fredericksburg, South Fredericksburg & Camden East.	11 farms covering 25 acres in seven different townships. None of the farms are located further north than the township of Bedford.	22 farms covering 25 acres. Primarily located in the township of Elizabethtown.
Nursery Farms	16 farms covering 88 acres in the southern part of the county. Primarily located in Richmond, Ernestown, North Fredericksburg, and Camden East.	13 farms covering 148 acres. All farms are located in the south except for one farm in Clarendon and Miller.	40 farms covering 454 acres. Primarily in the townships of Oxford-on-Rideau, Edwardsburgh and Augusta.
Greenhouse Flowers	12 farms covering 6,062 m ² . Located in Richmond, North Fredericksburg, Ernestown and South Fredericksburgh.	15 farms covering 10,050 m ² . Concentrated in Kingston township. One farm located in the north, Clarendon and Miller.	33 farms covering 21,614 m ² . In many of the townships, primarily Oxford-on-Rideau, Edwardsburgh, South Gower, Augusta, Elizabethtown and Front and Rear of Leeds and Lansdowne.
Christmas Trees	13 farms covering 365 acres. Primarily in the northern townships above Sheffield where 7 farms account for 294 acres.	15 farms covering 507 acres. Concentrated in the south but also present in the north (Oso and Clarendon and Miller).	45 farms covering 638 acres. Located in many townships but primarily in Oxford-on-Rideau, Elizabethtown, Augusta and Edwardsburgh.
Maple Trees	33 farms with 8,539 total taps. In every township except Amherst Island and Sheffield. 44% of taps, 16 farms, in Camden East.	58 farms with 35,308 taps. In every township. 42% of taps, 10 farms in Clarendon and Miller.	93 farms with 66,604 taps. Located in many townships. 34% of taps, 21 farms in Bastard and South Burgess township.
Bees	19 farms with 2,578 colonies. Concentrated in Ernestown and Camden East. None in north.	26 farms with 1,043 colonies. In every township except Clarendon & Miller. Concentrated in south.	38 farms with 2,365 colonies. In every township except South Gower and Front of Escott.
Mushroom / Sod Farms	None	One mushroom farm in Loughborough. No sod farms	None
Fur Farms (mink, fox)	None	Three mink farms and four fox farms in Storrington township.	One fox farm in North Crosby
Deer-Elk / Llama-Alpaca	None	Two deer farms (Wolfe Island and Portland township)	Two deer farms (Augusta and Elizabethtown) Eight llama farms (mostly in Elizabethtown and Front of Leeds and Lansdowne).

Source: Statistics Canada, Agricultural Census 1996.
(This table represents a partial profile of the various specialty farms in the study area.)

Appendix S.

Agriculture Related Business Survey Questionnaire

Confirmation of agri-related business activity and location.

1. Do you sell (buy) products and services to (from) farm businesses or agri-related businesses?
2. In which county is your business located?
3. In which municipality is your business located?
4. What is your business address?
5. What is the postal code of your business?
6. Municipality?
7. Is there more than one branch of this business? Please provide number.
8. Is the head office located in the study area (FLGLA)?
9. Number of branches inside the study area (including this branch)?
10. Number of branches outside the study area, but inside Ontario?
11. Number of branches outside Ontario but within Canada?
12. Number of branches outside Canada?
13. The next question deals with the products and services your business sold in 1999. Please list the five most important products/services in order of importance. Also indicate if these products were purchased in or outside FLGLA.

Products and Services Sold	In the study area		Out of the study area	
	Yes	No	Yes	No
1.				
2.				
3.				
4.				
5.				

14. Please estimate the total gross sales of your business between January 1, 1999 and December 31, 1999. Just to clarify, we are not asking for your business profits. We just need to measure the size of the industry in the study area.
\$ _____
15. What percentage of your total gross sales are related to sales to farmers or agri-related businesses? _____%

16. Where are these sales being made?
 What percentage of the sales is done inside FLGLA?
 What percentage of the sales is outside FLGLA, but inside Ontario?
 What percentage of the sales is outside Ontario, but inside Canada?
 What percentage is outside Canada?
17. The next question deals with the products and services your business bought in 1999. Please list the five most important products/services in order of importance. Also indicate if these products were purchased in or outside FLGLA.

Products and Services Bought	In the study area		Out of the study area	
	Yes	No	Yes	No
1.				
2.				
3.				
4.				
5.				

18. What percentage of your total supplies relate to agriculture in FLGLA? In other words what percentage of your supplies are bought from farmers in FLGLA?
 _____ %
19. SIC title and code (not asked of the respondent)
20. The final question relates to the number of employees in the business in 1999. Please include yourself, other owners and family members. This includes anyone working for the business, whether waged or unwaged.

a) # of employees

b) # of hrs/wk

c) # of wks/yr

Full-time

Part-time

Seasonal

Thank you for participating in our survey. The report will be completed in May.
 If you're interested, a copy of the executive summary can be forwarded to you at that time.