

Changing Industrial Structure Saskatoon

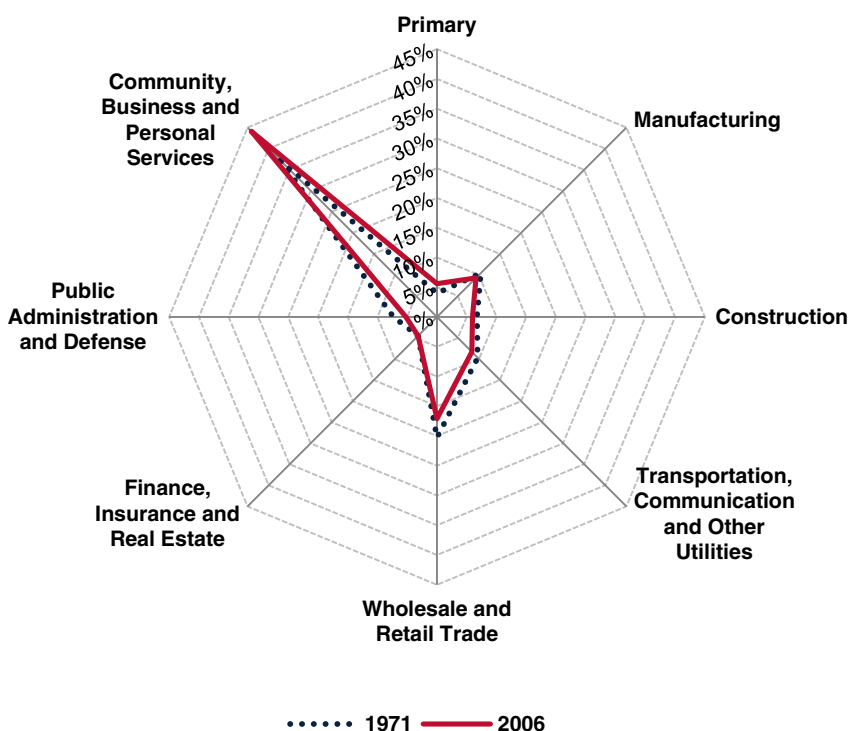
Figure 1 shows how Saskatoon's regional industrial composition has changed in the past 25 to 30 years. Since 1971, the broad industrial structure of Saskatoon's economy has remained relatively static. However, this may mask changes in the nature of economic activity in the regional economy.

One notable trend is the increased dominance of services. The share of employment in service-based industries increased from 37.2% in 1971 to 44.1% in 2006. The share of employment in Saskatoon's manufacturing sector declined only slightly, from 10.4% in 1971 to 9.3% in 2006. Wholesale and retail trade saw its share of employment decrease from 20.2% to 17.1% between 1971 and 2006, while transportation, communication and other utilities similarly declined from 9.7% to 8.3% in the same period. Public administration and defense, and the construction sector also declined, from 7.3% to 5.2%, and 6.7% to 6% between 1971 and 2006, respectively.

The FIRE sector experienced stability, with its share of the economy remaining at 4.5% through the period.

Primary industries experienced strong annual employment growth (3.8% per year), increasing from 4% of the economy in 1971 to 5.6% by 2006.

Figure 1: Change in industrial structure, 1971-2006



Source: Statistics Canada, Census of Population, 1971 and 2006

Table 1: Employment by industry, 1971-2006

	1971	1981	1991	2001	2006	1971-2006	CAGR
Primary	1,995	3,880	6,905	6,581	7,306	5,311	3.8%
Manufacturing	5,230	7,570	8,800	11,422	12,078	6,848	2.4%
Construction	3,375	6,360	6,390	6,699	7,761	4,386	2.4%
Transp., Comm. & Other Utilities	4,875	6,930	8,500	10,008	10,816	5,941	2.3%
Wholesale & Retail Trade	10,160	16,620	20,770	21,232	22,218	12,058	2.3%
Finance, Insurance & Real Estate	2,245	4,275	5,560	5,680	5,857	3,612	2.8%
Public Administration & Defense	3,655	5,455	7,225	6,406	6,744	3,089	1.8%
Community, Business & Personal Services	18,660	29,700	46,690	51,952	57,362	38,702	3.3%
Total	50,195	80,790	110,840	119,979	130,142	79,947	2.8%

CAGR = Compound Annual Growth Rate

Source: Statistics Canada, Census of Population, 1971-2006

Data Sources

Due to changes in industrial and occupational classification schemes, there are analytical challenges in ensuring that the data are comparable over time. Thus, the data in this report are often presented in aggregate form and for varying time periods. Long term structural change (1971 to 2006) is evaluated using Census data using eight industrial and occupational groups to ensure consistency. Labour Force Survey (LFS) data are only available from 1987 onwards. These data can only be used reliably at high levels of aggregation due to the nature of the LFS sampling frame. Cluster analysis relies on detailed 4-digit codes from the North American Industrial Classification System (NAICS). Such employment data are only available from the 2001 and 2006 Census of Population, due to changes in the classification scheme. Detailed occupational data from the Census are comparable from 1991 onwards.

Manufacturing Dynamics

Saskatoon

Figure 2 compares employment in the manufacturing industries to the overall employed labour force in Saskatoon over the period between 1987 and 2010. Employment is indexed to 100 in the base year (1987) to allow for easier comparison of their relative growth performance over time.

Figure 2 shows that the share of employment accounted for by manufacturing has fluctuated over time, but has generally outpaced overall employment growth. Manufacturing employment increased strongly throughout the 1990s. Despite a decline in the early 2000s, manufacturing employment generally increased until 2008 when manufacturing employment began a sharp decline. Nonetheless,

manufacturing employment levels are well above 1987 levels.

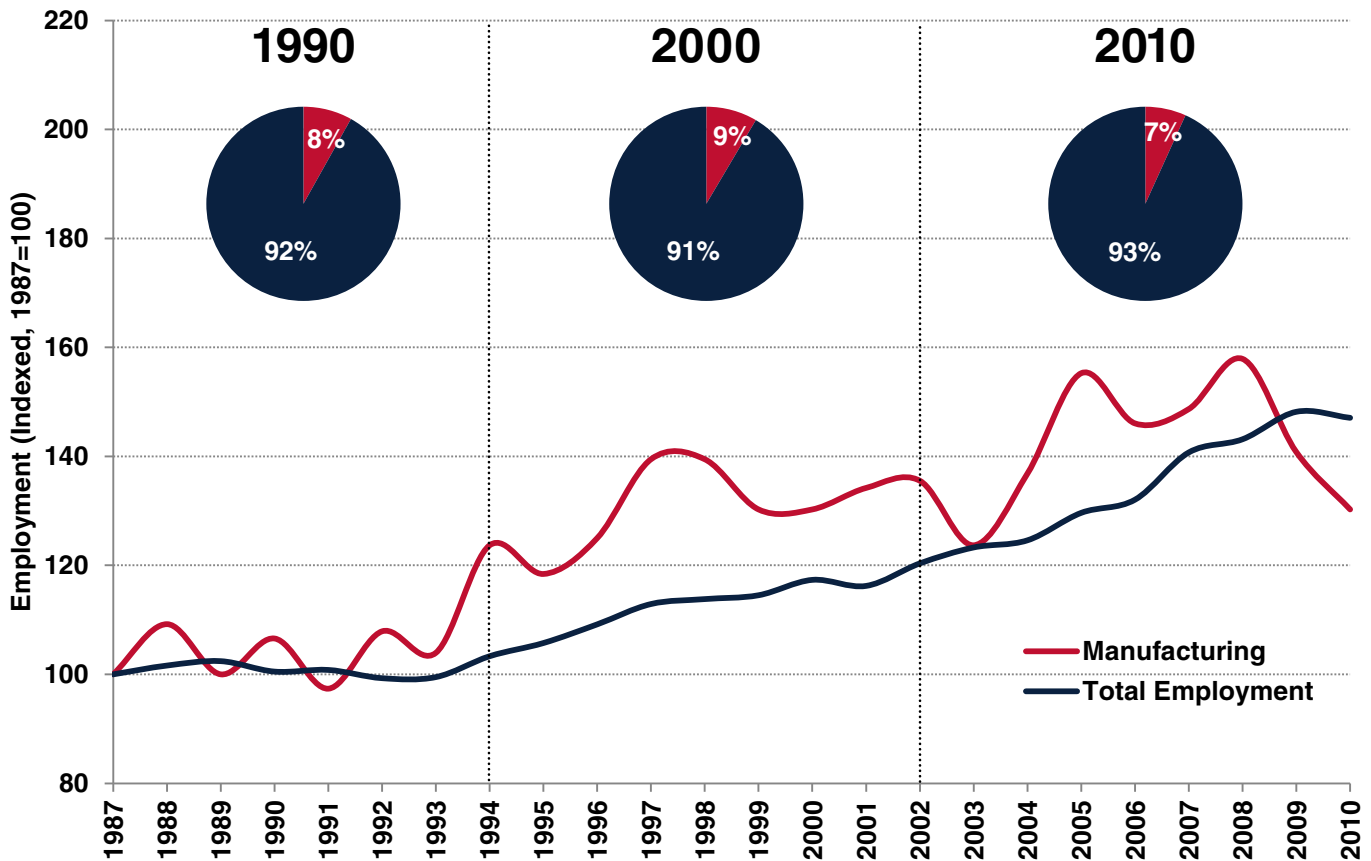
Given the diversification outside of manufacturing, a more detailed examination of the regional economy is warranted. Table 2 shows employment in eighteen industrial groups in 2001 and 2006. While there are high levels of growth and employment in the business services, ICT services, and higher education industries, growth performance and levels of specialization vary across sectors. These industrial groups, when demonstrating sufficient size, scope and specialization form the basis of clusters in the regional economy (see next page).

Table 2: Employment by industrial group, 2001 and 2006

Industrial Group	2001	2006
Agriculture	7,905	8,725
Mining	3,240	4,030
Oil and Gas	1,070	1,615
Wood & Wood Products	615	620
Maritime	235	195
Textiles & Apparel	580	430
Food	3,300	4,440
Steel	1,650	2,030
Automotive	1,155	1,175
Plastics & Rubber	1,525	1,460
Biomedical	1,015	840
ICT Manufacturing	1,150	1,085
ICT Services	6,965	8,915
Finance	5,530	6,830
Business Services	11,965	15,070
Creative & Cultural	2,780	4,045
Higher Education	6,625	8,290
Logistics	5,130	5,980

Source: Statistics Canada, Census of Population, 2001 and 2006

Figure 2: Manufacturing Employment, 1987-2010 (1987=100)



Source: Statistics Canada, Labour Force Survey, 1987-2010 [custom tabulations]

Cluster Dynamics

Saskatoon

Figure 3 depicts a 'bubble chart' comparing the performance eighteen industrial groups (or clusters) in Saskatoon. The horizontal axis shows the employment growth rate between 2001 and 2006. The vertical axis shows the employment location quotient comparing the proportion of Saskatoon's employment in an industrial sector to the Canadian average. The diameter of each 'bubble' is proportional to employment in the specified industrial group in 2006. Industrial groups that appear in the upper-right quadrant have positive growth rates and have a higher-than expected proportion of employment (specialization) in this group of industries.

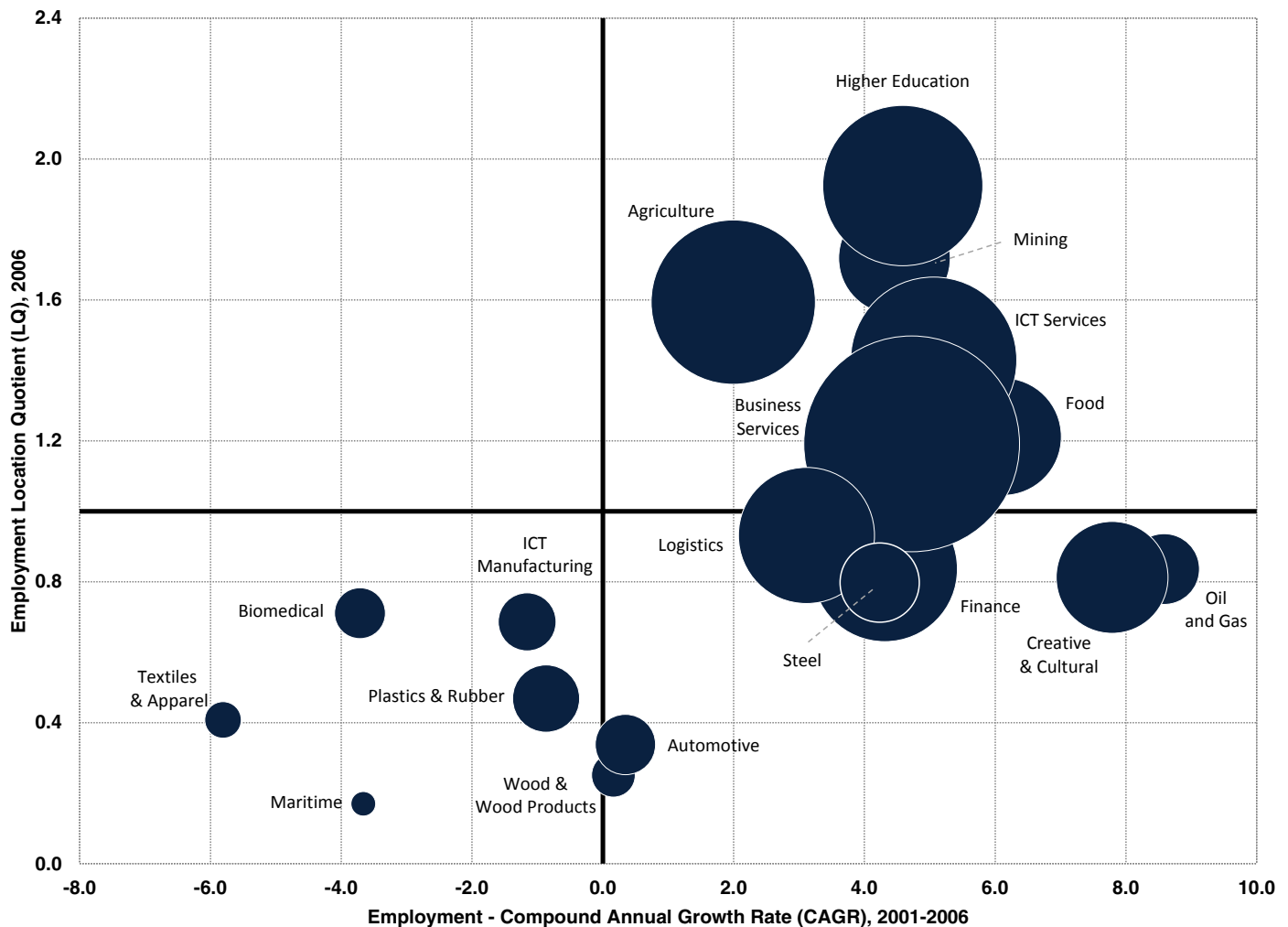
A more sophisticated analysis of industrial structure involves cluster analysis. Clusters represent groups of inter-related firms and industries that gain competitive advantage by concentrating geographically in certain locations. In this report, industrial groups that meet a set of quantitative criteria are identified as clusters. Clusters are identified based on their relative size (employment), their relative specialization (location quotient), as well as the breadth or scope of activities undertaken in the region.¹

According to these criteria, in 2006, there were three clusters in the Saskatoon region: agriculture, mining,

and higher education. All three of these clusters demonstrated high levels of growth between 2001 and 2006. A number of other industrial groups (oil and gas, steel, food, ICT services, business services, and the creative and cultural) demonstrated high levels of growth between 2001 and 2006, highlighting the growth and dynamism of the region as a whole.

1. For a more detailed description of the methodology, see: Spencer, G. M., Vinodrai, T., Gertler, M. S., & Wolfe, D. A. (2010). Do Clusters Make a Difference? Defining and Assessing their Economic Performance. *Regional Studies*, 44(6), 697-715.

Figure 3: Cluster growth and specialization, 2001-2006



Source: Statistics Canada, Census of Population, 2001 and 2006

Changing Occupational Structure

Saskatoon

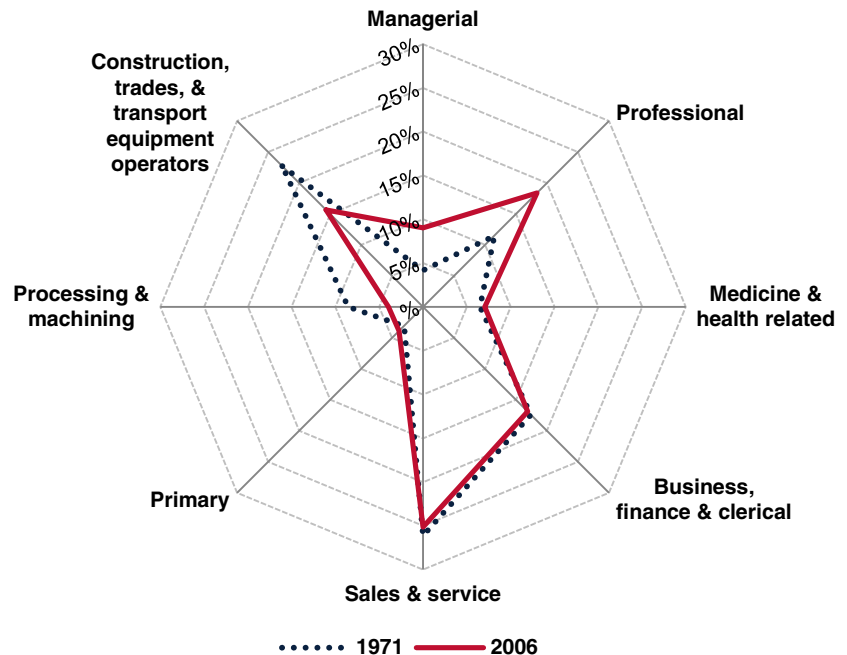
Between 1971 and 2006, Saskatoon's workforce has undergone a substantial transition in its occupational structure. Figure 4 shows the broad changes in the occupational composition of the regional economy.

Most notably, the proportion of employment accounted for by construction, trades and other related occupations decreased from 22.5% of the workforce in 1971 to 15.7% in 2006. Similarly, employment in processing and machining occupations decreased from 8.6% to 4% in the same time period.

By contrast, employment in professional occupations increased from 11.5% to 18.4% between 1971 and 2006. Managerial occupations saw similar growth, more than doubling in share from 4.2% to 9% of the workforce between 1971 and 2006. As seen in Table 4, medicine and health-related occupations saw relatively strong annual growth, accounting for 7.1% of the workforce by 2006.

Modest decline in employment share was experienced in both sales and service, and business, finance and clerical occupations. The former saw its share of the workforce decline from 26.1% to 25.1% between 1971 and 2006, while the latter shrank from 17.4% to 16.9% in the same period.

Figure 4: Change in occupational structure, 1971-2006



Source: Statistics Canada, Census of Population, 1971 and 2006

Table 4: Employment by occupation, 1971-2006

	1971	1981	1991	2001	2006	1971-2006	CAGR
Managerial	2,220	7,680	11,385	11,085	11,840	9,620	4.9%
Professional	6,125	10,410	15,065	21,835	24,055	17,930	4.0%
Medicine & health related	3,455	5,105	7,645	8,240	9,240	5,785	2.9%
Business, finance & clerical	9,285	15,680	18,825	19,605	22,145	12,860	2.5%
Sales & service	13,915	19,425	29,395	31,735	32,915	19,000	2.5%
Primary	1,640	2,305	4,930	5,120	5,075	3,435	3.3%
Processing & machining	4,560	7,250	8,545	4,975	5,185	625	0.4%
Constr., trades, & transport equip. operators	12,120	12,930	15,040	18,295	20,520	8,400	1.5%
Total	53,320	80,785	110,830	120,890	130,975	77,655	2.6%

CAGR = Compound Annual Growth Rate

Source: Statistics Canada, Census of Population, 1971-2006

Emerging Knowledge Economy

Saskatoon

Figure 5 provides additional perspective on how the occupational composition of Saskatoon has changed over time. In aggregate, the composition of Saskatoon's regional workforce has changed very slowly. The share of employment in service-oriented jobs has declined at the same time that a mirror increase in knowledge-based occupations can be seen. Nevertheless, service-oriented occupations have consistently accounted for the highest proportion of employment in Saskatoon, peaking at 47% in 2001. By 2010, service-oriented work had declined to account for 42% of employment.

As Table 5 shows, employment in knowledge-based occupations increased at 1.6% per year between 1991 and 2006, only slightly outpacing the region's overall employment growth rate of 1.1% per year. The share of employment in knowledge-based occupations

increased its share of the workforce from 30% in 1987 to 35% by 2010. The share of employment in production-oriented jobs remained relatively stable at 19% between 1987 and 2010, while agricultural work accounted for only a fraction of total employment throughout the period.

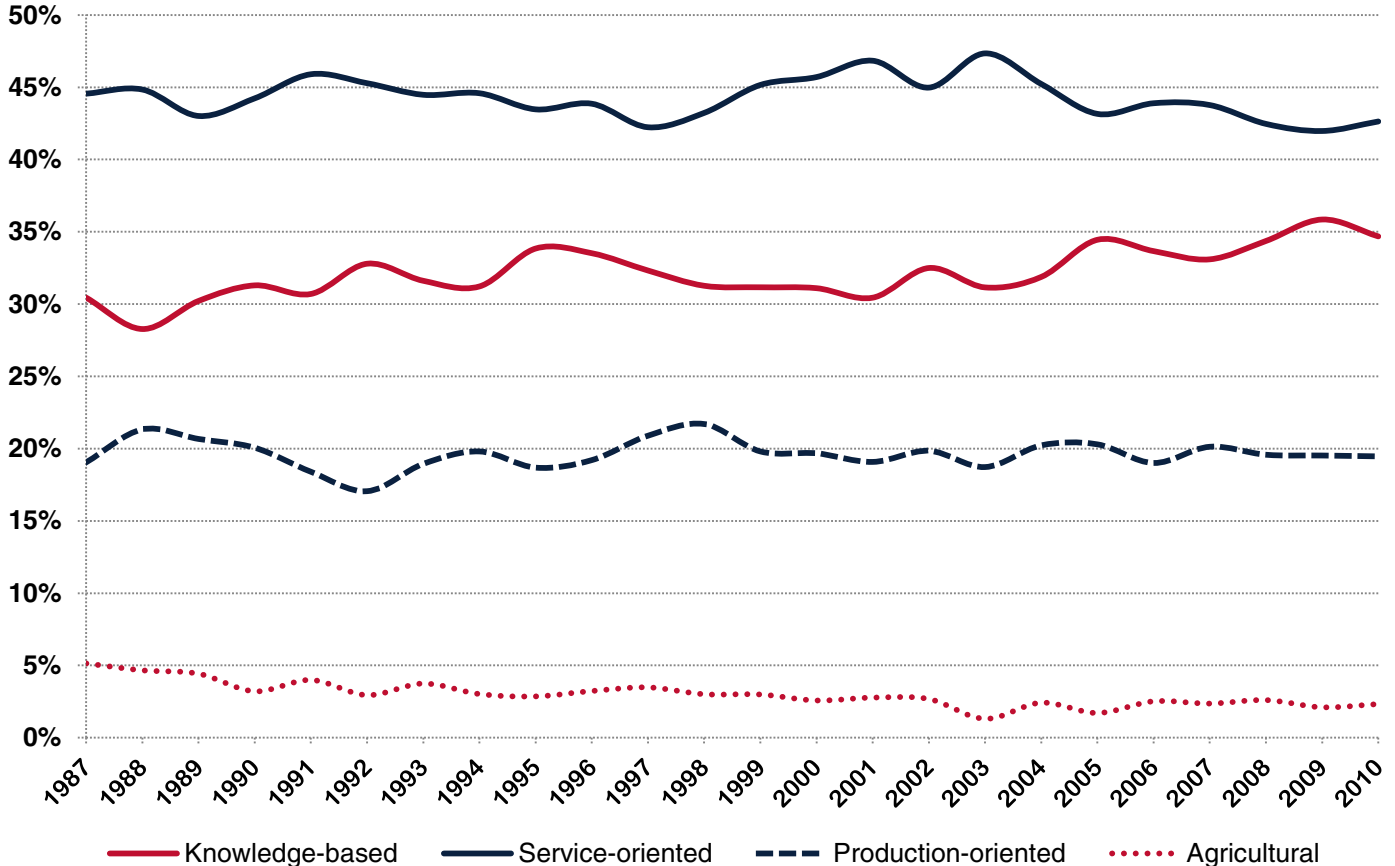
Table 5: Employment by occupation class, 1991-2006

	Agricultural occupations	Knowledge-based	Service-oriented	Production-oriented	Total Workforce
1991	4,205	35,140	50,105	21,855	113,065
1996	4,160	34,020	52,505	22,570	115,895
2001	4,005	40,335	52,165	24,380	122,905
2006	3,830	44,385	55,825	26,935	132,445
1991-2006	-375	9,245	5,720	5,080	19,380
CAGR	-0.6%	1.6%	0.7%	1.4%	1.1%

CAGR = Compound Annual Growth Rate

Source: Statistics Canada, Census of Population, 1991-2006 (custom tabulations)

Figure 5: Changing occupational composition of the labour force, 1987-2010



Source: Statistics Canada, Labour Force Survey, 1987-2010 [custom tabulations]