



Catalogue no. 11-621-MIE — No. 053

ISSN: 1707-0503

ISBN: 0-662-45232-4

Analytical Paper

Analysis in Brief

Employment Trends in the Federal Public Service

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Editor: Christian Houle

Managing Editor: Yvan Gervais

Production: Christian Houle and Debi Soucy

March 2007

Catalogue No: 11-621-MIE2007053

ISSN: 1707-0503

ISBN: 0-662-45232-4

Frequency: Occasional

Ottawa

How to obtain more information:

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E-Mail inquiries: analysisinbrief-analyseebref@statcan.ca

Published by authority of the Minister responsible for Statistics Canada

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Employment Trends in the Federal Public Service

Katarzyna Naczka, Public Institutions Division

Summary

Even though its numbers have been on the rebound recently, the federal public service was smaller in 2006 than it was 11 years earlier. However, its composition has been changing in tune with the times.

While there are fewer of them, federal employees in general are more knowledge-based than they were 11 years ago. In addition, there are proportionally more women, and public servants are older on average than Canadian workers. Also, their average age is increasing.

Between 1995 and 2006, both the working-age population of Canada and the number of employed Canadians were on the rise consistently, with an overall increase of 15.5% and 24.0% respectively. But during the same period, the number of federal employees experienced a decline and then an increase, resulting in a slight overall decline in the number of employees in 2006 compared to 1995.

In March 2006, just over 380,700 individuals were working for the federal government, down slightly from nearly 382,000 in March 1995. The number of federal employees fell to a low of about 326,500 in March 1999, and since the turn of the millennium it has been on the rebound. In terms of rates, there were 11.7 federal employees for every 1,000 Canadians in 2006, down from 13.0 in 1995.

Between 1999 and 2006, federal employment increased by just over 54,000, an average annual pace of growth of 2.2%.

It is relevant to examine the occupational, gender and age structure of federal employees during a period in which the labour market saw a rise in women's participation, a rise in the average age of workers and an economy that was increasingly knowledge-based. This study uses the Core (federal) Public Administration for making comparisons with Canadian workers in general.

The Core (federal) Public Administration (CPA) refers to the federal government employees excluding the Royal Canadian Mounted Police (RCMP), the Canadian Forces and separate agencies such as the Canada Revenue Agency. Focusing on data from this core shows that the profile of federal employees has changed substantially during this period beginning with downs followed by ups. CPA employment represents about half of the federal government employment between 1995 and 2006.

The technological evolution of the working environment has had an impact on the federal government. After a small initial dip, there has been a steady increase in the number of employees in knowledge-based occupational categories and a clear decline among those not in such categories.

In 2006, knowledge-based workers, such as scientific and professional workers, and those in computer systems, represented 58% of federal workers in the CPA. Eleven years earlier, they represented only 41%.

The proportion of women within the CPA has increased continuously during the period 1995 to 2006. In fact, since 1999, women have outnumbered men within the CPA although men still dominate the Canadian workforce in general.

The median age of workers within the CPA is increasing for both men and women. Even if both, the male and female sides of the workforce are aging, the female side is aging at a faster rate.

Knowledge-based workers

Researchers have defined knowledge-based workers in many different ways. The definition for this study, inspired by one classification proposed by Lavoie and Roy, labels certain occupational categories as more knowledge-based.¹ These include: physicists; mathematicians; chemists; civil and mechanical engineers; biochemists; agriculturalists; ecologists; analysts; programmers; economists; accountants; lawyers, and artists.

The majority of the occupations listed above can in general be found in the following occupational categories defined in the CPA: scientific and professional; computer systems; program and administrative, executive; and administrative and foreign service categories. Therefore, they will be referred to as the knowledge-based occupational categories.

The less knowledge-based categories are made of the CPA's technical, operational and administrative support categories.

Remaining unclassified are the students and the employees with missing information about their occupational group representing together less than 4% of all CPA employees between 1995 and 2006.

According to some authors, the shift to a more knowledge-based economy has been steadily occurring for the past three decades.² One explanation by Lavoie and Roy relies on information and communication technologies that are often seen as the engine of change leading to the knowledge-based economy and as the main factor explaining labour market employment transformations.

However, other studies have shown that the growth of knowledge-based occupations has not been limited to industries commonly thought of as high-technology and there has been an increase in level of knowledge intensity across most industry sectors.³

Decline in federal employment during the past eleven years

While Canada's population and the number of employed Canadians were on the rise consistently between 1995 and 2006, the number of federal employees experienced an overall drop of just over 1,000, equivalent to a 0.3% decline during the same period.

Canada's working-age population increased from 22.6 million in 1995 to 26.1 million in 2006, an increase of nearly 16%. The number of employed Canadians also rose, by roughly 24%, from 13.0 million in 1995 to about 16.1 million in 2006.⁴

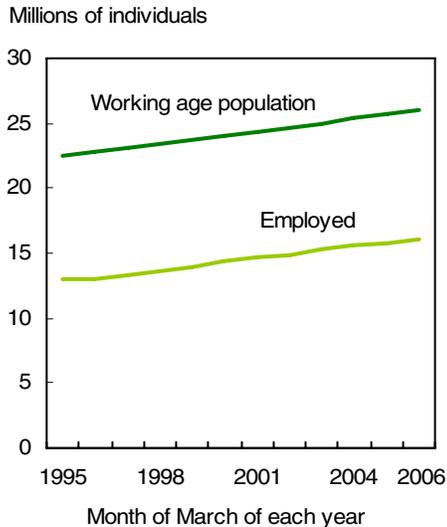
1. See Marie Lavoie and Richard Roy, *Employment in the Knowledge-Based Economy: A Growth Accounting Exercise for Canada*, Human Resources Development Canada, Applied Research Branch, Strategic Policy, R98-8E, 1998.

2. See, for example, John R. Baldwin and Desmond Beckstead, "Knowledge workers in Canada's economy, 1971-2001," *Insights on the Canadian Economy*, Statistics Canada Catalogue no. 11-624-MIE, October 2003, <http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=11-624-MIE2003004> (accessed February 2, 2007).

3. See Desmond Beckstead and Tara Vinodrai, "Dimensions of occupational changes in Canada's knowledge economy, 1971-1996," *The Canadian Economy in Transition*, Statistics Canada Catalogue no. 11-622-MIE, October 2003, <http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=11-622-MIE2003004> (accessed February 2, 2007).

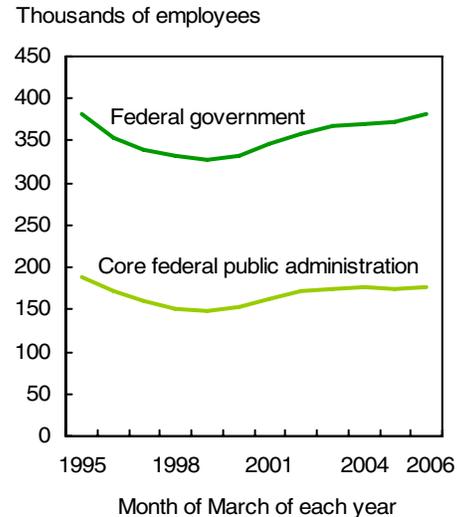
4. See Statistics Canada, CANSIM, table 282-0001.

Chart 1
The working age and the employed Canadians
continue to increase...



Source: Statistics Canada, CANSIM, table 282-0001.

Chart 2
... while federal employment experienced
decline until 1999



Source: Statistics Canada, special tabulation, Public Institutions Division.

In contrast, during the same time period, the number of federal government employees fell slightly. By 2006, just over 380,700 employees were working for the federal government, compared with nearly 382,000 about 11 years earlier. In terms of rates, there were 11.7 federal employees for every 1,000 Canadians in 2006, down from 13.0 in 1995.

By 1999, federal employment had fallen to 326,500, down by slightly more than 55,000 employees since 1995. More than half of this decline (29,000) occurred in 1996, the biggest single-year drop in the entire 11-year-long period.

The numbers of federal employees have slowly recovered since the turn of the millennium, and by 2006 had almost regained their 1995 level. Since 1999, the number of federal employees has increased by just over 54,000, an average annual rate of growth of 2.2%.

The fastest growth occurred between 2000 and 2001, when federal employment rose by 13,700. The growing Canadian population, resulting in an increased demand for government services and the creation of new programs may be one reason of many that led to the increase in employees in more recent years.

There are several factors involved in the initial decline seen during this 11-year period, but the Early Retirement Incentive (ERI) Program and the Early Departure Incentive (EDI) Program must be considered when looking at this trend. The ERI and EDI programs were instigated during the 1994/95 Program Review.

This review was implemented to determine which activities would continue as initially planned, and which would be revised, terminated or continued on a much reduced budget. The ERI and EDI were

implemented in 1995 to help departments and other organizations downsize as a result of budget decisions. The effects of this downsizing would continue to be felt until March 1999.⁵

Employment in the Core (federal) Public Administration (CPA) refers to the federal government employees excluding the RCMP, the Canadian Forces and separate agencies such as the Canada Revenue Agency. Core employment followed a similar pattern to the federal government, although the 11-year-long decline was larger. Employment in the CPA fell by 5.6% from just over 188,000 employees in 1995 to almost 178,000 employees in 2006.

The CPA is used for the remainder of this analysis as it represents the most complete source of data providing information on occupation, gender and age of federal employees.

Core Public Administration employees more knowledge-based

For the purposes of this study, several occupational categories are referred to as knowledge-based. These categories defined as in the CPA are: scientific and professional; computer systems; program and administrative, executive; and administrative and foreign service categories.

Occupations considered as less knowledge-based are: operational; technical; and administrative support.

More specifically, less knowledge-based occupational categories include groups such as secretarial, stenographic and typing, engineering and scientific support, social science support, general technician, correctional services, general labour and trades, general services and clerical and regulatory group.

Students and others non-classified were ignored for the occupational analysis, representing less than 4% of the CPA employees.

In 2006, an estimated 102,700 CPA employees worked in knowledge-based categories, an overall increase of about 25,400 from the total of 77,300 in 1995. Their numbers actually declined between 1995 and 1998 to just over 69,000, and then rebounded rapidly.

By 2006, knowledge-based workers represented 58% of federal workers in the Core (federal) Public Administration. Eleven years earlier, they represented only 41%.

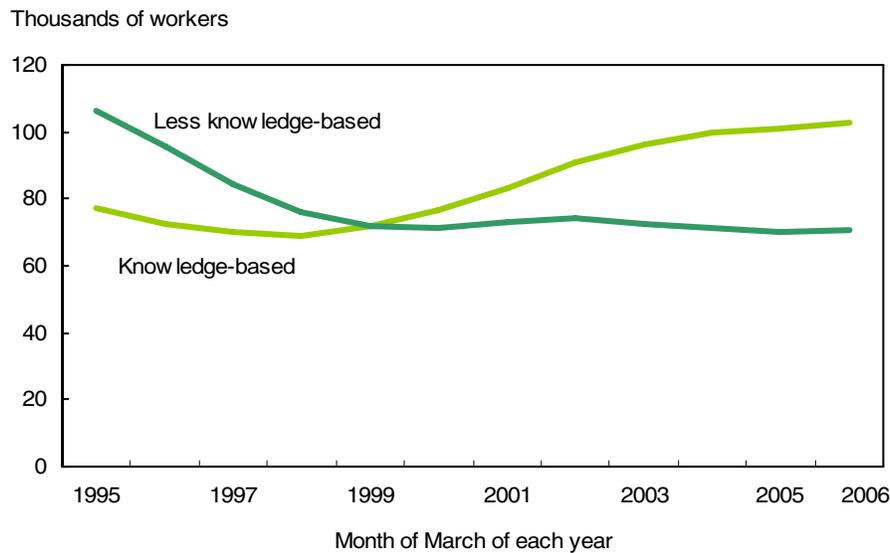
The peak of this increase occurred between 2001 and 2002 with roughly 7,700 new knowledge-based workers, the majority (63%) belonging to either the scientific and professional or program and administrative categories. These two categories also include the largest number of employees within the knowledge-based categories.

There was one exception to this dip-then-rise trend—in the computer systems category, employment rose continuously from 1995 to 2006. This may be associated with the technological boom.

The rate of growth has slowed slightly since 2002 in the computer systems category. This trend is likely a repercussion of what has been commonly referred to as the high-tech bust years experienced after 2000.

5. See *Getting Government Right—Governing for Canadians*, Treasury Board of Canada Secretariat, Catalogue no. BT31-6/1998-1, February 1997, http://www.tbs-sct.gc.ca/report/gfc-gpc/gfc-gpc02_e.asp (accessed February 2, 2007).

Chart 3 In the Core Public Administration, knowledge-based occupational groups on the rise since 1998 while less knowledge-based occupations are declining



Source: Statistics Canada, special tabulation, Public Institutions Division.

Fewer employees in less knowledge-based occupations

On the other hand, the proportion of employment in the less knowledge-based occupational categories has declined since 1995. They are the group of workers who left the federal government en masse between 1995 and 1999.

Employment in the less knowledge-based occupational categories dropped by a little over 35,600, from 106,000 in 1995 to just over 70,600 in 2006.

The administrative support category experienced the largest declines within the less-knowledge-based category. However, it still continues to make up the largest portion of this category.

Research has shown that more jobs involving routine skills are becoming codifiable and hence replaced, whereas the jobs that cannot be codified are becoming more necessary.⁶

Thus, trends observed in employment in the federal government could partly be explained by a steady increase in occupations that rely on new technologies, and a decrease in occupations which can be replaced by such technology.

For instance, technologies such as automated data capture are being used to minimize the need for manual keying. In combination with the ERI and EDI implemented for budget restriction, this technological change added to the decline of such employees.

6. See, for example, Chris Freeman and Luc Soete, *The Economics of Industrial Innovation*, Third Edition, The MIT Press: Cambridge, 1997.

At a time when computers were massively introduced into government workplaces, it could be hypothesized that new requirements could transform some technical jobs into more knowledge-based positions. If this would have happened, the loss of technical employees could have resulted in a reclassification of workers, from less knowledge-based to more knowledge-based.

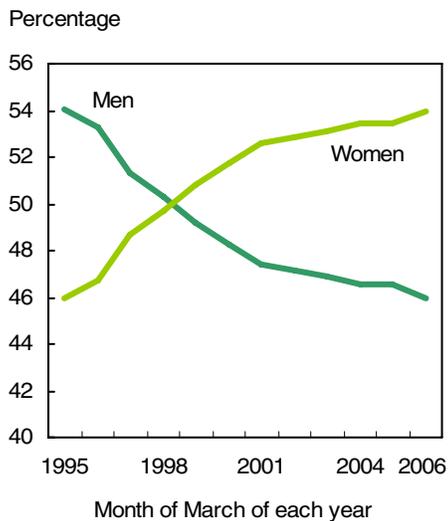
An analysis of departure and entry indicated that the decline in less knowledge-based employment from 1995 to 2006 was due more to employees leaving rather than having employees switch to a different occupational category. Of those who left the less knowledge-based category, between 62% and 88% really left the CPA altogether, while the remaining proportion moved into the knowledge-based or other category.⁷

More women in the Core Public Administration

In addition to the higher number of employees in knowledge-based occupational categories, the CPA has gained far more women than men in recent years.

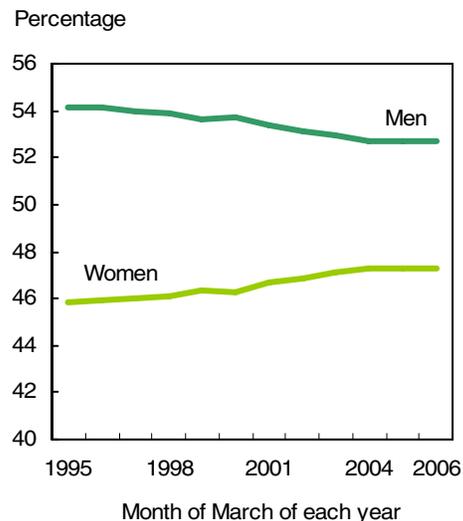
The proportion of women within the CPA has been increasing continuously from 1995 to 2006. In fact, there has been a flip in gender representation, and since 1999, women have outnumbered men within the CPA. In contrast, men still dominate the Canadian workforce in general.

Chart 4
Gender representation in the CPA has flipped in 1999...



Source: Statistics Canada, special tabulation, Public Institutions Division.

Chart 5
...while gender gap among employed decreasing but men still dominate



Source: Statistics Canada, CANSIM, table 282-0001.

7. See the box "Data sources and methods."

In the Canadian labour force's working-age population (those aged 15 or more), more men than women were employed. However, the gap between the proportion of employed men and employed women has been slowly narrowing. In 1995, a proportion of 45.9% of employed Canadians were women. By 2006, this proportion had grown to 47.3%.

Between 1995 and 1997, more men than women left the Core Public Administration. On the other hand, this situation was reversed between 1998 and 2006, when more women left the CPA.

However, there were continuously more female than male employees heading into the CPA between 1995 and 2006. As a result, women accounted for the majority (54.0%) of all CPA employees in 2006, up from only 46.0% in 1995.⁸

Core Public Administration is older than the workforce in general

The CPA workforce is much older than the general workforce by three different measures: mean and median age (median age means half were above and half were below this age), and the proportion of workers aged 45 and over.

The aging workforce and looming retirement of the baby boomers has been a topic of increased concern in the past few years. These workers may play a key role in transferring the institutional memory as their experience and skill in occupations may be essential to the knowledge-based economy.

The median age of all workers—in the CPA, throughout the Canadian labour force, men and women—is rising. However, the median ages for employed men and women are noticeably lower than those for men and women in the CPA. The median age rose from 40 in 1995 to 44 in 2006 among women in the CPA and from 44 to 46 among men in the CPA. The median age rose from 37 in 1995 to 40 in 2006 among employed women and from 38 to 40 among employed men.

Both the male and female sides of the workforce are aging, but the female side is aging at a faster rate.

The year 1999 was the turning point of the dip and rise employment in the federal government. From 1995 to 1999, up to 45% of employees who left the CPA were under 45 years old. Combining this fact with the effect of time of the 4-year period on those who kept their job, the average age of CPA employees increased.

Table 1 Average and median age of CPA employees and employed Canadians, as of March of 1995, 1999 and 2006

Age		Core Public Administration			Employed Canadians		
		1995	1999	2006	1995	1999	2006
Average	Male	43.3	43.8	44.9	38.4	39.1	40.2
	Female	40.5	41.5	43.2	37.2	38.1	39.5
Median	Male	44.0	45.0	46.0	38.0	39.0	40.0
	Female	40.0	42.0	44.0	37.0	38.0	40.0

Sources: Statistics Canada, special tabulation, Public Institutions Division and Labour Force Surveys.

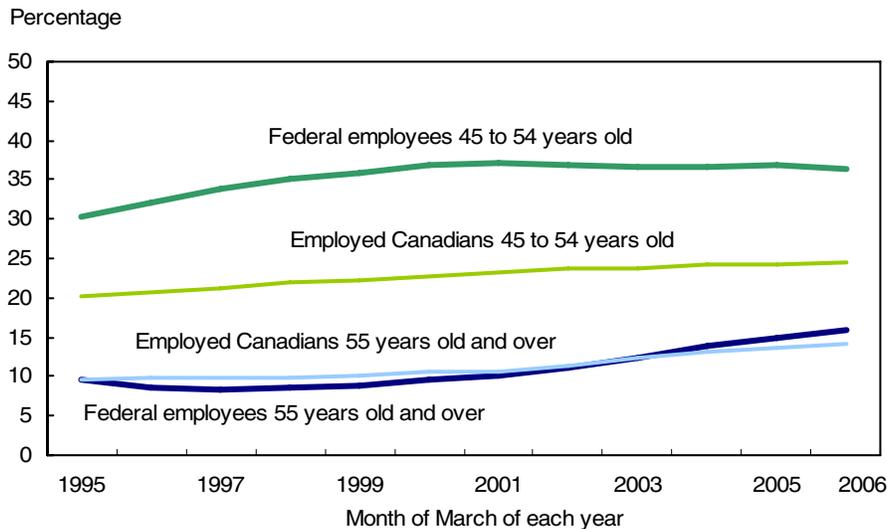
8. See the box "Data sources and methods."

In addition, within the CPA, the proportion of those aged 45 and over increased from almost 40% in 1995 to just over 52% in 2006. At the same time, the proportion of employed Canadians aged 45 and over increased from almost 30% to just under 39%.

The 14-percentage-point gap between the two groups in 2006 indicates that the public service workforce is much older than the workforce in general. The main difference between the two groups came from the group of employees aged 45 to 54.

With over half of the CPA employees aged 45 and over there is an increased risk of losing necessary knowledge and expertise pertinent to the new Economy. As pointed out by Schetagne: “Even though formal education is important in its own right, it is not the only component of the efficiency and productivity of workers. Knowledge and skills acquired on the job are also critical.”⁹

Chart 6 Much greater proportion of older workers in the Core Public Administration compared to employed Canadians



Source: Statistics Canada, special tabulation, Public Institutions Division and CANSIM, table 282-0001.

9. See Sylvain Schetagne, *Building Bridges Across Generations in the Workplace*, Canadian Council on Social Development and Columbia Foundation, 2001, <http://www.ccsd.ca/pubs/2001/bridges/bbeng.pdf> (accessed February 2, 2007).

Data sources and methods

The Core (federal) Public Administration (CPA) includes employees that work in the core occupational groups of all departments listed in Schedule I and Schedule IV of the Financial Administration Act (FAA), as well as the ministerial staff, deputy ministers, Governor/Order in Council appointees, judges and students affiliated with these departments.

Classification into occupational categories is the main focus of this paper and the vast majority of CPA employees can be classified using the CPA's current classification standards. Those in the CPA not classified under these standards are placed into the category "Other or Student", which represents less than 4% of the total employment covered. Regrouping into either the knowledge-based or less knowledge-based category was done to the best ability based on occupational category as information such as level of education was not available.

The CPA covers almost entirely the federal public service employment once Canada Revenue Agency and Border Services Canada Agency are removed from the federal public service total. The federal public service consists of departments and agencies named in Schedules I, IV and V of the FAA. It does not include the RCMP, organizations classified as "Non-commercial and other", or the Canadian Forces.

For comparative purposes, the Canada Revenue Agency (CRA) data were removed from 1995 to 1999 as the CRA became a separate agency in November 1999 (then referred to as the Canada Customs and Revenue Agency). The departure of the CRA from the CPA resulted in a loss of approximately 40,000 employees in the file. Failure to remove these data would have shown a false drop in the number of Core (federal) Public Administration employees between 1999 and 2000, when in actuality there is an increase. For similar reasons, Canada Border Services Agency data were also removed.

Departure and entry were estimated using a year to year snapshot comparison. The Personal Record Identifier was used to identify the absence or the addition of a 'new' employee between two consecutive years. In this context, an employee that has left is one that was in the CPA in a given year but was no longer in the CPA, for various reasons, the following year. Similarly, a new employee refers to one that belonged to the CPA in a given year but did not belong to the CPA the year prior.

Data on the CPA and occupational categories were obtained using the Incumbent File administered by Public Works and Government Services Canada. Data from the month of March of every year under study were used as this month coincides with the end of the fiscal year and is known to be a stable month in terms of employment data.

Limitations of the data involved missing information with respect to gender, age and employee classification. Missing data affected less than 4% of the records, and imputations were performed to substitute most of this information.

Numbers for the federal government employment have been taken from the [Public Sector Employment Program](#).