

A profile of the Canadian Forces

Jungwee Park

Canada's military makes up a small but significant segment of Canadian society. The Canadian Forces (CF) are an important part of the country's national image, both at home and abroad. On the international front, these highly trained men and women are repeatedly called upon to participate in the humanitarian, peacekeeping and security missions of international organizations such as the UN and NATO; while domestically, their expertise is often needed in search and rescue operations and aiding citizens cope with natural disasters such as forest fires, floods, avalanches and ice storms. Additional responsibilities include assisting in the protection of Canada's fisheries and in the detection and interception of shipments of illegal drugs.

The forces also contribute significantly to the economy. With more than 111,000 people on the payroll (including about 24,000 civilian workers), the Department of National Defence (DND) and CF together are Canada's second largest employer and the single largest public service employer, making a significant contribution to local, provincial and territorial economies (DND 2008a). In the fiscal year 2006/2007, Canada's military spending was \$15.7 billion (DND 2008b).

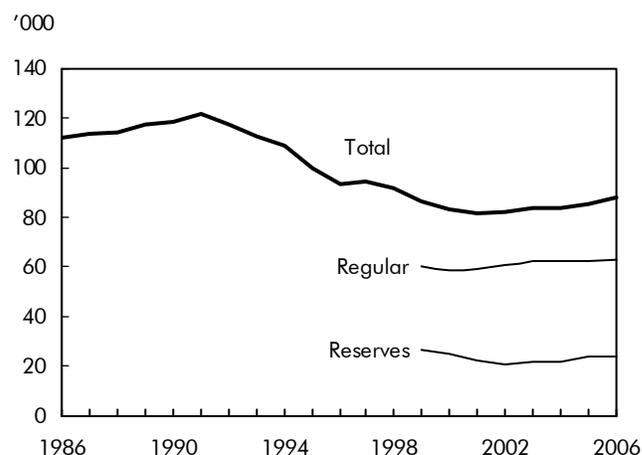
The military generally increased in the late 1980s, reaching its highest numbers in 1991 with more than 120,000 people (Chart A). The subsequent decline continued until 2001 when personnel numbered 81,600, about a 33% decrease. Since then, the forces have grown steadily, reaching 87,700 in 2006. These changes are related to the international political climate—the rapid decline occurring after the end of the Cold War and the recent increase coinciding with the war on terror since 9/11.¹

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This article profiles the personnel of the Canadian Forces as a special group distinct from the rest of the Canadian labour force. Using the Canadian Forces Supplement to the Canadian Community Health Survey (CCHS) – Mental Health and Well-being, it also compares the military's prevalence rates of work stress and other work-related mental health issues with those of the civilian working population and investigates whether any specific groups experience a higher prevalence.

The distinctive work arrangements and responsibilities of the military, especially missions to conflict-ridden places, such as Bosnia-Herzegovina, Rwanda or Afghanistan,² warrant examining the psychological well-being and work stress of CF members. However, wartime conditions are not the only source of

Chart A After hitting their nadir in 2001, military personnel increased for the next five years



Source: Department of National Defence, Military personnel and wages and salaries, 1986 to 2006.

Table 1 Characteristics of military personnel and civilian workers, aged 15 to 64

	Regular forces				Reserve forces			Total civilian workers
	All military	All regular	Officer	Non-commissioned	All reserve	Officer	Non-commissioned	
Sex	%							
Men	85.3 *	87.8 *	85.6 *	88.4*	79.2*(*)	84.9*	78.1*	53.3
Women	14.7 *	12.2 *	14.4 *	11.6*[*]	20.8*(*)	15.1*(*)	21.9*(*)[*]	46.7
Age								
15 to 24	19.3	9.9 *	10.4 *	9.7*	42.1*(*)	10.2*	48.0*(*)[*]	19.3
25 to 39	51.8 *	57.7 *	49.2 *	60.2*[*]	37.4*(*)	48.6*	35.4 (*)[*]	33.3
40 to 54	28.3 *	32.0 *	39.3 *	30.0*[*]	19.2*(*)	37.6	15.8*(*)[*]	36.6
55 to 64	0.6 *	0.4 ^E *	1.1 ^E *	F	1.3*(*)	3.6*(*)	0.9 ^E [*]	10.7
Education¹								
Less than high school	6.5 *	7.1 *	F	9.0*	4.3*(*)	F	5.7*(*)	13.3
High school diploma	28.0 *	31.4 *	5.5 *	38.7*[*]	15.2*(*)	4.9*	18.5 (*)[*]	19.5
Some postsecondary	12.7 *	13.1 *	6.2	15.1*[*]	11.0*(*)	7.0	12.2*(*)[*]	6.6
Postsecondary degree/diploma	52.6 *	48.2 *	88.1 *	37.1*[*]	69.4*(*)	88.1*	63.4*(*)[*]	59.6
Immigrants	5.9 *	4.1 *	6.0 *	3.6*[*]	10.0*(*)	9.2*(*)	10.2*(*)	20.6
Official language								
English only	53.8 *	51.4 *	26.6 *	58.3*[*]	59.9*(*)	54.6*(*)	60.9*[*]	64.5
French only	3.8 *	3.0 *	F	3.8*	5.9*(*)	2.2 ^E	6.6*(*)[*]	10.7
Both	42.2 *	45.6 *	73.1 *	37.8*[*]	33.9*(*)	43.1*(*)	32.2*(*)[*]	23.5
Neither	0.2 ^E *	F	F	F	F	F	F	1.3
Visible minority	6.4	4.5 *	3.4 *	4.8*[*]	11.1*(*)	5.9*(*)	12.0*(*)[*]	17.1

* significantly different from total civilian workers at 0.05 or less

(*) significantly different from the same column of regular forces at 0.05 or less

[*] significantly different from officers at 0.05 or less

1. Population 25 or older.

Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

stress—in addition to military-specific stressors such as deploying overseas, frequent change of station and temporary duty away from home, day-to-day aspects of the job like work responsibilities, work hours, or difficulties with supervisors have a significant effect on the psychological well-being of military personnel (Pflanz and Sonnek 2002; Sudom et al. 2006). CF members may be exposed to numerous stressful events and be at risk of experiencing job stress.

Moreover, psychological ill health of military personnel may compromise their physical health, impair work performance or decrease quality of life; it also has a significant economic impact, in both civilian and military populations (Fikretoglu et al. 2007; Pflanz and Ogle 2006; Hourani et al. 2006; Dobрева-Martinova et al. 2002).

Regular and reserve forces differ

The two primary components of the CF are regular and reserve forces.³ Generally speaking, while the regular force consists of full-time personnel, most members of the reserves are part-time personnel (for more detailed classifications see *Data source and Definitions*). The reserves are used to mobilize or expand the army when needed. In other words, they are eligible to deploy on operations, and in recent years more and more reservists were supporting overseas missions (DND 2008c). As well, the reserves augment the professional forces by providing soldiers, units or specialists to the CF (DND 2008c). For example, reservists in Afghanistan provide their expertise in medicine and psychological operations in addition to combat responsibilities (Castonguay 2008).

Table 2 Characteristics of military personnel

	Men	Women	Regular	Reserves	All military
			%		
Rank					
Junior	58.7	66.0*	56.3	68.2(*)	59.8
Senior	21.2	14.1*	21.8	16.2(*)	20.1
Officer	20.2	19.8	22.0	15.6(*)	20.1
Region					
Atlantic	22.0	18.8*	22.7	18.8(*)	21.6
Quebec	16.7	18.1	15.1	21.3(*)	16.9
Central	33.6	36.3*	34.4	33.2	34.0
Western	27.7	26.8	27.9	26.8	27.6
Service					
Land	57.4	47.6*	50.2	70.1(*)	56.0
Air	23.9	30.6*	31.5	8.7(*)	24.9
Sea	17.0	18.8	18.3	14.8(*)	17.3
Communication	1.7	3.0*	F	6.5	1.9
Years in service					
Less than 10	32.9	41.8*	23.7	59.9(*)	34.2
10 to 24	53.4	52.8	62.9	29.9(*)	53.3
25 or more	13.7	5.4*	13.4	10.3(*)	12.5
Occupation					
Combat arms	32.3	10.8*	22.2	46.1(*)	29.1
Communications	6.0	5.0	6.5	4.3(*)	5.9
Maritime	5.1	4.2*	4.8	5.5	5.0
Maritime communications	3.5	3.5	3.7	3.1	3.5
Maritime technical	3.2	0.4 ^{E*}	3.9	F	2.8
Aviation	6.9	4.3*	8.0	2.9(*)	6.5
Aviation technical	7.4	5.0*	9.1	2.1(*)	7.1
Administration, etc. ¹	19.0	46.7*	23.9	20.8(*)	23.0
Engineering	2.3	1.3*	2.4	1.5(*)	2.1
Technical	8.9	1.8*	9.1	4.8(*)	7.9
Medical	3.4	13.0*	4.8	4.9	4.8
General officer specialist	2.0	4.1*	1.6	3.9(*)	2.3

* significantly different from men at 0.05 or less

(*) significantly different from regular forces at 0.05

1. Includes logistics, security, intelligence or emergency services.

Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Over the last five years, the regular forces and the reserves showed similar increasing trends. In 2006, the CF had about 64,000 regular members and 24,000 reservists. But reserve personnel tend to be much younger than regular force members. More than 40% of reservists

were under 25, compared with only 10% of full-time military personnel (Table 1). However, this age cohort in the regular force showed a significant increase in recent years—by 2007, 17% (15% of officers and 18% of non-commissioned members) were under age

25 (calculation based on DND 2008d)—as a result of more young recruits.

More than one in five reservists were women compared with about one in eight in the regular forces in 2002. Also, while less than 5% of regular force personnel were immigrants or from a visible minority, more than 10% of reservists were. This reflects the many young reserve members from visible minority or immigrant groups.

Overall, 60% of CF personnel were junior non-commissioned members, from privates to master corporals; 20% were senior non-commissioned members, sergeants to chief warrant officers; and the remainder were officers. About 68% of reservists were junior non-commissioned members and 16% were officers, compared with 56% and 22% of the regular forces (Table 2). The rank structure of the regular forces changed little from 2002 to 2007 (DND 2008d).

Regular and reserve forces differed in terms of environment (land, air or sea). Among reservists, 70% were in the army, 9% air force and 15% navy, compared with 50%, 32%, and 18% for regular personnel. In terms of occupation, members of the reserve and regular forces play different roles in their services—reservists tended to concentrate much more in combat arms (e.g. infantry battalion, or armoured or artillery regiment) than regular force personnel (46% vs. 22%).

Members of the CF differ from civilian workers

Members of the military differed substantially from civilian workers aged 15 to 64 with respect to

Data source and definitions

The Canadian Community Health Survey (CCHS) – Canadian Forces supplement on mental health was used to profile military personnel. The target population for this survey was all full-time regular members of the Canadian Forces, and reservists who had paraded at least once in the past six months. In order to improve the efficiency of the survey design, each target population was stratified by sex and rank. Collection took place between May and December 2002 to allow for spreading the field workload and more time in which to contact respondents departing or returning from deployments or training courses. The vast majority of computer-assisted interviews were conducted face-to-face during working hours in private on-base rooms. A total of 5,155 regular forces personnel were interviewed, a response rate of 79.5%. For the reserves, the numbers were 3,286 and 83.5% (Statistics Canada 2003).

The 2002 Canadian Community Health Survey (CCHS) – Mental Health and Well-being was used to compare the general working population with the Canadian Forces. (The CCHS sample did not include regular forces personnel, but may have picked up some members of the reserves.) The survey covered people aged 15 or older living in private dwellings in the 10 provinces. Most interviews (86%) were conducted in person; the remainder, by telephone. Proxy responses were not accepted. The 36,984 interviews represented a response rate of 77%.

General working population were those aged between 15 and 64 working at jobs or businesses in the past 12 months.

Members of the regular forces are full-time personnel. They consist of officers and non-commissioned members in continuing, full-time military service. Its all units, other elements, and members are at all times liable to perform any lawful duty. When enlisting, the members are signing on for an initial engagement ranging from three to nine years, not including subsidized training or education. The initial engagement can be followed by an indefinite period of service or a continuing engagement. According to the current terms of service, they can retire after 25 years.

Members of the reserve forces are part-time military personnel. They consist of officers and non-commissioned members enrolled for other than continuing, full-time military service when not on active service. Its all units, other elements, and all members may be ordered to train for such periods as are prescribed in regulations made by the Governor in Council and may be called out on service to perform any lawful duty other than training at such times and in such a manner as by regulations or otherwise are prescribed by the Governor in Council. Service in the reserves is voluntary and is for an indefinite period. Reservists are enrolled to serve on a part-time basis but may volunteer for full-time employment.

The reserve force has four sub-components: Primary Reserve, Cadet Instructor Cadre (CIC), Canadian Rangers, and the Supplementary Reserve (DND 2008g).

The **Primary Reserve** is the largest and is commonly what people refer to when using the term ‘reserves.’ Its personnel train regularly on a part-time basis with occasional periods of full-time service. It is divided into Naval, Army, Air, Communications, Health Services, Legal, and the National Defence Headquarters Primary Reserve List.

CIC officers are responsible for the safety, supervision, administration, and training of cadets aged 12 to 18.

Canadian Rangers provide a military presence that cannot conveniently or economically be provided by other components of the CF in sparsely settled northern, coastal, and isolated areas.

The **Supplementary Reserve** consists of former members of the regular and reserve forces. They do not perform training or duty but provide a pool of personnel that could be called out in an emergency (DND 2008e).

Reserve service falls in three classes: A, B and C. **Class A** is used for periods of service to a maximum of 12 consecutive days. A member of the Primary Reserve may be ordered to train on Class A only for an annual maximum of 60 days (DND 2004a). **Class B** is used for service of 13 or more consecutive days in a temporary full-time position on the instructional or administrative staff of a school or other training establishment; on such training attachment and such training course of such duration as may be prescribed by the Chief of the Defence Staff; or on duties of a temporary nature approved by the Chief of the Defence Staff, or by an authority designated by him, when it is not practical to employ members of the regular force on those duties. **Class C** service may be used at any authorized location, when the member is on full-time service and is serving with approval by or on behalf of the Chief of the Defence Staff in a regular force establishment position or is supernumerary to regular force establishment; or on either an operation or an operation of a type approved by or on behalf of the Chief of the Defence Staff.

Officer means a person who holds Her Majesty’s commission in the Canadian Forces; a person who holds the rank of officer cadet in the Canadian Forces; and any person who pursuant to law is attached or seconded as an officer to the Canadian Forces. An officer is a leader trained to be responsible for a group of people. Higher levels of education and training are required for officers than non-commissioned members. Four rank groups are defined: General Officers, Senior Officers, Junior Officers, and Subordinate Officers.

A **non-commissioned member** is any person other than an officer, who is enrolled in, or who pursuant to law is attached or seconded otherwise than as an officer to, the CF. They fall into three rank groups: warrant officers, non-commissioned officers and privates.

nearly every demographic characteristic. CF personnel were much younger—more than 70% under 40 versus only 53% of civilians in 2002. This is not surprising since, unlike most other jobs, the forces still have a

compulsory retirement age. Less than 1% of CF members were 55 to 64, compared with 11% of the working population.

International military expenditures, 2001

Canada currently ranks 6th in NATO in terms of defence budgets and 17th in terms of defence spending as a share of gross domestic product (GDP).

	Total	Share of GDP
	US\$ (billions)	%
Belgium	2.2	1.3
Canada	7.3	1.1
Czech Republic	1.1	2.2
Denmark	2.4	1.5
France	25.3	2.6
Germany	21.0	1.5
Greece	3.3	4.8
Hungary	0.8	1.8
Iceland	0.0	0.0
Italy	15.5	1.9
Luxembourg	0.1	0.8
Netherlands	5.6	1.6
Norway	2.8	1.8
Poland	3.7	1.8
Portugal	1.3	2.1
Spain	6.9	1.2
Turkey	5.1	5.0
United Kingdom	34.0	2.4
United States	310.5	2.9

Source: Department of National Defence 2008b.

Today's CF personnel, however, tend to be much older than 20 years ago. In 2007, only 28% of the regular forces were under 30 (DND 2008d) compared with 53% in 1988 (Strike 1989). This change in the age profile may reflect the general trend of population aging, delayed retirement, and the intentional decrease in new recruits as part of 1990s downsizing.⁴ Similarly, in 2002, about one-quarter of regular personnel had less than 10 years of service compared with 56% in 1988 (Strike 1989).⁵

Compared with the general working population, about twice the proportion of CF personnel were bilingual. More than 40% (46% for the regular forces and 34% for reservists) spoke both official languages. Such high percentages are due to the high proportions of bilingual officers (73% in the regular forces) and members from Quebec (77% bilingual).⁶

Overall, the Canadian military is predominantly male. However, women's representation has risen in recent decades. In 2002, 15% of all personnel were women—12% in the regular forces and 21% of reservists—up from 2% in 1972 and 10% in 1988 (Strike 1989).⁷

Similar to their male colleagues, about one in five female members were officers in 2002. According to the most recent data (DND 2008d) for the regular forces, a higher proportion of women than men were officers (28% compared with 23%).

Women's roles in the CF are quite different from those of men. More than 30% of women belonged to the air force compared with 24% of men, while a smaller proportion were in the army (48% vs. 57%). Women worked in all types of military occupations including combat duty, but their distribution was considerably different from men's.⁸ While about one-third of men in the CF reported combat arms as their occupation, 11% of women did so. In 2002, about one-half of women worked in administration, logistics, security, intelligence, or emergency services compared with 19% of men. This indicates that women still continue to be concentrated in the more traditional support areas, including medical and dental, with some increases in less traditional occupations, particularly naval operations and maritime engineering, and a modest increase in combat arms (Soeters and Van der Meulen 2006).

An international comparison shows that women in the Canadian military have played greater roles (see *Women in the military*). Canadian women account for a higher share of personnel in the armed forces and a much higher share of deployments than in many other countries.⁹

Visible minorities under-represented

A very small proportion of CF personnel were members of visible minorities—only 6% of all CF members (5% of regular forces and 11% of reservists) were visible minorities compared with 17% of the civilian working population. This is much lower than the U.S. military's rate of 33% (Office of the Under Secretary of Defense, Personnel and Readiness 2006). Only 3% of officers in the regular forces were members of visible minorities.

Similarly, a very small portion were immigrants (6% compared with 21%). The low rates of visible minority and immigrant members may be related to the citizenship requirement for joining the CF. Currently, only Canadian citizens can join the regular forces (DND 2008e).¹⁰

Women in the military

Canada was one of the first NATO member countries to legally admit women to the military (1951) and has among the highest participation of women in terms of proportion of the force and deployment responsibilities.

	Year of admittance	Proportion in 2005	Deployed in 2005/2006
		%	%
Belgium	1975	8.3	20.6
Bulgaria	1995	6.0	
Canada	1951	12.6	26.8
Czech Republic	Early 1980s	12.2	
Denmark	1962	5.0	6.0
France	1972	12.8	5.0
Germany	1975	6.0	3.5
Greece	1979	16.0	
Hungary	1996	4.3	8.0
Italy	1999	1.0	
Latvia	1991	20.0	
Lithuania	1991	9.1	
Luxembourg	1980	5.7 ¹	
Netherlands	1979	9.0	
Norway	1977	6.3	
Poland	1988	0.5	1.3
Portugal	1992	8.4	Up to 10
Romania	1973	5.0	
Slovakia	Early 1980s	7.1	
Slovenia	1991	15.4	
Spain	1988	10.7	
Turkey	1955	4.0	
United Kingdom	1949	9.0	
United States	1948	15.5	11.0

1. 2006.

Source: Committee on Women in the NATO Forces (NATO 2008).

However, even after excluding recent immigrants (in Canada less than 10 years) and adjusting for age, significant differences in visible minority and immigrant representation remain between the CF and the civilian working population (data not shown). The under-representation of visible minorities in the CF can be explained by many factors (Jung 2007): the importance of education, family, and ethnic identity;¹¹ a relatively low ranking of

military service as a career, combined with the negative image provided by their own native militaries; and insufficient numbers in senior ranks to provide the necessary positive role models. However, visible minority representation in the CF is important because they are the fastest growing segment of the Canadian population, particularly in the traditional recruitment target age group of 17 to 24 (Rueben 2004).

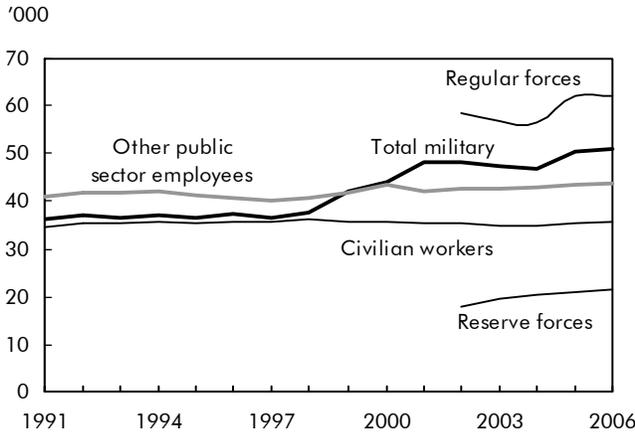
Wages, income and education

Whereas the earnings of civilian workers remained relatively constant at \$35,000 (in 2002\$) for the last decade and a half, CF personnel experienced steady increases since the late 1990s. On average, they have earned more than other public sector employees since 1999 (Chart B).¹² Earnings of reservists increased in recent years, although their average was as low as \$21,000 in 2006, which is not surprising given that as part-timers many of them had other jobs. As well, about 40% of them were still students (DND 2004b).

Rising military wages and salaries correlate with the age structure of the members. The aging of CF personnel was accompanied by increased levels of experience. In 1988, 35% of personnel had served 10 to 24 years and only 9% had 25 or more years of service (Strike 1989). In 2002, 63% had served 10 to 24 years and 13% had 25 or more.

The steady increase in earnings also coincided with rising levels of education. To meet the high technical demands of modern warfare, more recognized training and education are necessary. In 2002, more than half of CF members aged 25 or older had a postsecondary degree or diploma (88% of officers; 37% of non-commissioned members in the regular forces, 63% in the reserves). In 1988, 19% of regular force personnel had a postsecondary degree or diploma¹³ and 26% had less than high school graduation (Strike 1989).¹⁴ By 2002, postsecondary graduation had increased to 48% and less than high school graduation had fallen to 7%. Even with the increase, postsec-

Chart B CF members had higher overall earnings than civilian workers



Note: Earnings in 2002 dollars.
Sources: Department of National Defence, Military personnel and wages and salaries; Statistics Canada, Survey of Employment, Payrolls and Hours, 1991 to 2006.

Not surprisingly, incomes of CF personnel vary considerably by rank—personnel are paid first by rank and then by specific occupation. Among men, the median income in 2002 was \$73,000 for officers and \$48,000 for non-officers.

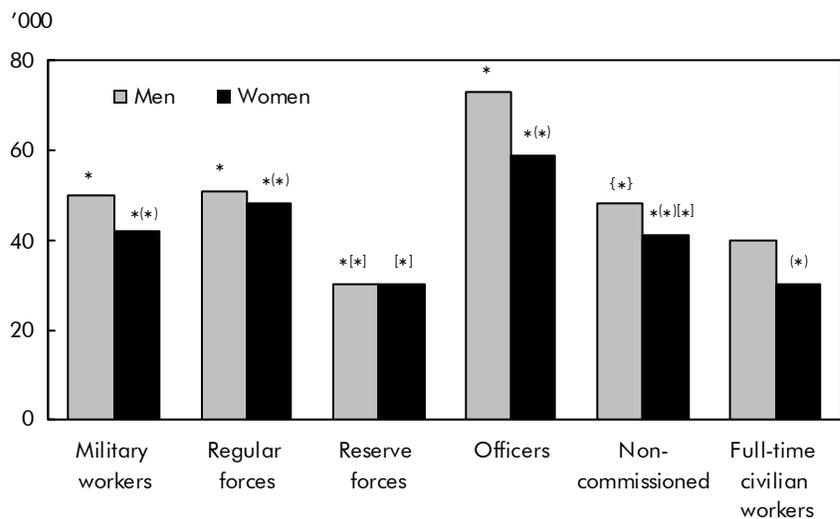
As well, clear differences were evident in the median incomes of men and women for all groups except the reserves. Among officers, the median income for men was higher than for women (\$73,000 vs. \$59,000), mainly due to the high share of men found at higher ranks. As the forces are a bottom-loaded system, it may take considerable time for women to achieve greater representation at senior levels (Truscott and Dupre 1998).

The income gap between the sexes may also be related to the concentration of women in more traditional support areas. For instance, only 4% of women in the regular forces had participated in three or more deployment missions lasting three months or longer, compared with 26% of men. In addition, women’s years of service were much lower than men’s—only

ondary graduation among CF personnel was lower (53%) than for civilian workers aged 25 or older (59%). However, members of the reserves had higher rates (69%), reflecting on-campus recruiting.¹⁵

As with earnings, the annual income of military personnel was also higher than that of the full-time working population. In 2002, the median personal income of men in the CF was \$50,000 compared with \$40,000 for their civilian counterparts (Chart C). Among women, even non-commissioned members had higher incomes than the Canadian median (\$42,000 vs. \$30,000). The higher incomes for CF members may be explained in part by a variety of allowances received in addition to their salaries—for example, for exceptional hazard, field operations, paratroops, aircrew, rescue specialist, diving, sea duty and submarine.

Chart C CF members had higher median personal income than civilian full-time workers



* significantly different from the same sex group of all full-time civilian workers at 0.05 or less
 (*) significantly different from men of the same group at 0.05 or less
 [*] significantly different from the same sex group of regular forces at 0.05 or less
 (*) significantly different from the same sex group of officers at 0.05 or less
 Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Table 3 Characteristics of psychological well-being among members of the military

	All	Regular forces	Reserve forces	Civilian workers	
Life dissatisfaction	4.6* ¹	5.0*	%	3.8* ^{(*)1}	4.0
Negative self-perceived mental health	7.8*	9.1*		4.8* ^{(*)1}	5.9
Alcohol dependence	4.8* ¹	4.2* ¹		6.2* ^{(*)1}	3.3
Major depression	6.9*	8.0*		4.2* ^{(*)1}	4.8

* significantly different from total civilian workers at 0.05 or less

(*) significantly different from regular forces at 0.05 or less

1. significance disappeared after age-sex adjustments.

Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

5% had served for 25 or more years in 2002, compared with 14% of men.¹⁶

Psychological well-being

Small but statistically significant differences in psychological well-being existed between full-time CF members and the civilian workforce in 2002 (see *Psycho-social well-being*). Members of the regular forces were more likely to be dissatisfied with their life (5% vs. 4%), to perceive their mental health as fair or poor (9% vs. 6%) and to

have had major depression in the past 12 months (8% vs. 5%). As well, compared with reservists, regular forces personnel showed a higher prevalence of depression and negative self-perceived mental health (Table 3).

For better comparability, the psychological well-being of civilian full-time managers was compared with that of military officers in the regular forces (Chart D). Similarly, non-commissioned personnel were compared with non-managers.¹⁷ Military officers had higher rates of

negative self-perceived mental health and major depression; and non-officers seemed to have lower psychological well-being (Chart E). More than 5% of non-commissioned members were dissatisfied with their life and 9% felt that their mental health was fair or poor. Compared with less than 5% of non-managers, 8% of non-commissioned staff had had a major depression in 2002.

Differences in alcohol dependence disappeared after age-sex adjustments. Higher rates of dependence among CF personnel were due to their being young and predominantly male.

To investigate whether any specific groups in the CF are under a greater risk of psychological ill health and work stress, multivariate logistic regression models were developed. Associations between psychological health and military-related variables such as rank, type of CF (regular or reserve), career deployments, and months absent due to military responsibility were examined while controlling for possible confounders such as age, marital status, income and education. Psychological well-being and

Psycho-social well-being

Life dissatisfaction: very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied. For this article, respondents answering very dissatisfied or dissatisfied were considered to have life dissatisfaction.

Negative self-perceived mental health: excellent, very good, good, fair or poor. For this study, respondents answering fair or poor were considered to be in negative self-perceived mental health.

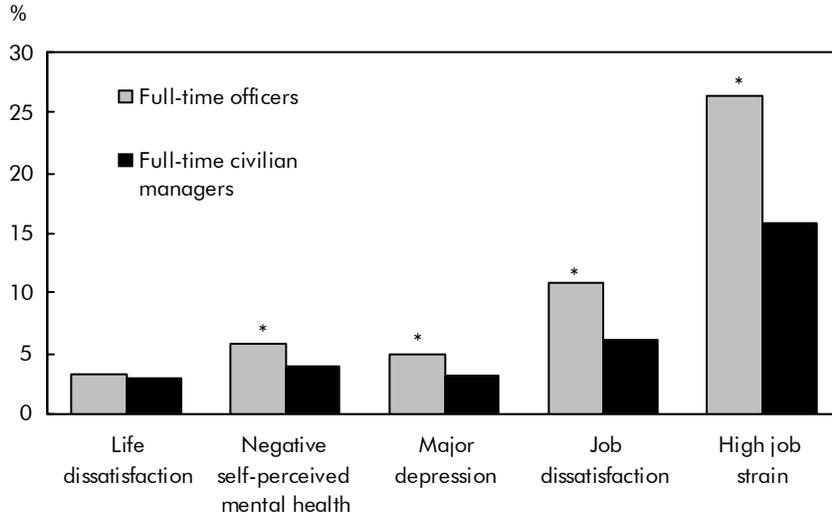
Major depression (past 12 months) is a period of two weeks or longer with persistent depressed mood and loss of interest or pleasure in normal activities, accompanied by symptoms such as decreased energy, changes in sleep and appetite, impaired concentration, feelings of guilt or hope-

lessness, or suicidal thoughts. The definition and criteria are from the *Diagnostic and Statistical Manual of Mental Disorders* used by the American Psychiatric Association.

Alcohol dependence (past 12 months) is measured by questions on alcohol use and behaviour and attitudes towards drinking. The definition includes alcohol-related withdrawal, loss of control, or social or physical problems. The questions are based on an international instrument that provides diagnostic estimates for psychoactive substance use disorder.

The algorithms used to measure the 12-months prevalence of major depression and alcohol dependence are available in the Annex of the 2004 Health Reports supplement (Statistics Canada 2004).

Chart D Military officers had higher work stress than civilian managers



* significantly different from full-time civilian managers at 0.05 or less
 Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

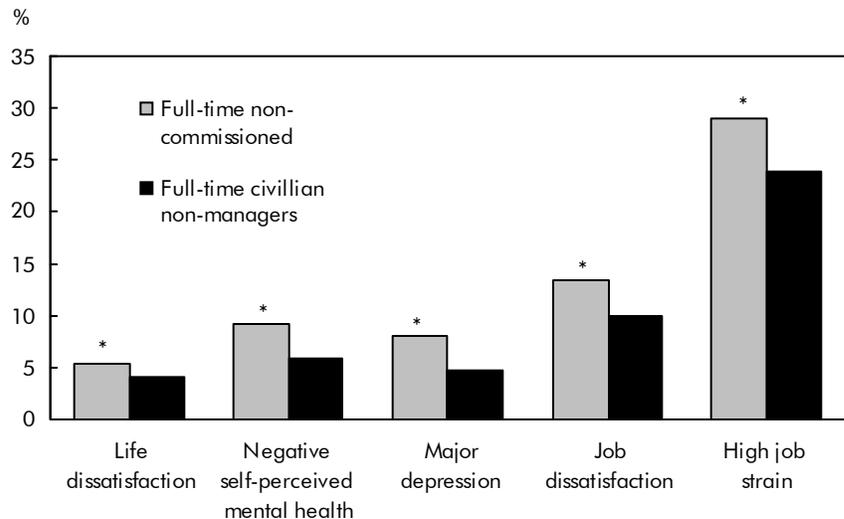
more than 12 months in the past 24 were almost twice as likely to have alcohol dependence as those away less than 6 months.

Members of the regular forces were almost twice as likely as reservists to perceive their mental health as poor or fair rather than good, very good, or excellent. Women in the CF were 1.7 times more likely than men to have been depressed in the past 12 months. Compared with married personnel, those never or previously married had a significantly higher prevalence of mental health problems such as life dissatisfaction, negative self-perceived mental health, and alcohol dependence (data not shown). These findings on inter-group differences are generally consistent with studies on the U.S. military (Hourani et al. 2006).

work stress were measured by prevalence of life dissatisfaction, negative self-perceived mental health, 12-month major depression, job dissatisfaction, high job strain, and alcohol dependence. Since the analyses were based on cross-sectional data, neither causality nor temporal ordering of events can be inferred.

Being away from home for long periods of time due to deployment, exercises, sea time, individual or collective training courses, temporary duty, aid to civil authorities, or Canadian disaster relief missions was associated with life dissatisfaction and alcohol dependence (Table 4). The effects were significant even after controlling for other socio-demographic and military-occupation variables such as sex, age, personal income, education, deployments and years in the service. CF members away from home

Chart E Military non-commissioned personnel had higher life and job dissatisfaction than civilian non-managers



* significantly different from full-time civilian workers at 0.05 or less
 Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Table 4 Adjusted odds ratios for psychological well-being and work stress among military personnel

	Life dissatisfaction	Negative self-perceived mental health	Major depression	Job dissatisfaction	High job strain	Alcohol dependence
adjusted odds ratio						
Sex						
Men (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Women	1.10	1.44*	1.70*	0.99	1.24*	0.40*
Rank						
Officers (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Non-commissioned	1.50*	1.62*	1.65*	1.16	1.14	1.58*
Total forces						
Regular	1.48*	1.89*	2.05*	1.60*	1.44*	1.03
Reserve (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Number of deployments in career						
None (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
1 to 2	0.75*	0.82	0.94	1.10	0.98	1.25
3 or more	0.97	1.12	1.10	0.92	0.92	0.87
Months away from home in past two years						
Less than 6 (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
6 to 12	0.94	0.99	0.90	0.99	1.11	1.21
More than 12	1.26*	1.09	1.09	1.26	1.56*	1.71*

* significantly different from reference group (ref) at 0.05 or less

Note: Adjusted for age, marital status, personal income, education and years served.

Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Work stress

Full-time CF members¹⁸ and civilian workers reported different types of work stress (see *Measuring stress*). CF personnel indicated higher levels of job security and co-worker support. Less than 2% of military personnel felt job insecurity compared with 14% of full-time civilian workers (Table 5). High co-worker support among CF members may be related to the nature of military work, which involves close collegial collaboration and clear role definitions.

On the other hand, members of the regular forces were less likely to be satisfied with their job—13% reported job dissatisfaction compared with 10% of civilians. As well, 28% of the forces had high job strain compared with 23% of civilians.¹⁹ This indicates that more CF personnel felt their job requirements did not match their capabilities, resources or needs.

Table 5 Work stress among members of the regular forces

	Regular forces	Civilian full-time workers
		%
Job insecurity	1.8*	14.3
Job dissatisfaction	12.7*	9.5
High job strain	28.4*	22.9
Low co-worker support	37.4*	40.7
Self-perceived work stress	30.8* ¹	33.2

* significantly different from civilian full-time workers at 0.05 or less
1. significance disappeared after age-sex adjustments.

Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

To be more specific, 26% of military officers had high job strain compared with 16% of full-time civilian managers. Compared with non-managers in civilian jobs, non-commissioned members of the military showed higher job strain (29% vs. 24%) and job dissatisfaction (13% vs. 10%).

Multivariate analyses reaffirmed that high job strain was also associated with months away from home due to deployment responsibilities—CF personnel away from home more than 12 months were 1.6 times more likely to have job stress than those away less than 6 months—but that the number of deployments had no significant impact. Even though women deploy less frequently than their male colleagues, they were 1.2 times more likely to have high job strain. The number and length of deployments were not associated with work stress among women in the CF (data not shown).²⁰ As well, regular personnel were 1.6 times more likely than reservists to be dissatisfied with their job—similar to the U.S. situation, where military job satisfaction was reported to be higher among the reserves and National Guard personnel than among those on active duty (Sanchez et al. 2004).

Conclusion

The Canadian military has faced numerous changes and challenges in recent decades. After a steady decline in the 1990s, the number of personnel has increased since 2001. In 2006, the CF comprised 64,000 full-time regular force members and 24,000 reservists. Military members are much younger than other workers. The number of women among both officers and non-commissioned members has grown since the early 1970s (Strike 1989) and their roles in the CF have expanded. Yet women accounted for only 15% of the CF (12% of regular forces) in 2002. Visible minorities were also significantly under-represented, less so among reservists.

Education and income levels of CF personnel increased over the past decade. More than half had postsecondary graduation and average earnings of regular forces personnel were higher than those of other public sector employees. Since the late 1990s, average CF pay has increased rapidly.

Although CF personnel reported solid job security and co-worker support, they experienced some issues related to psychological well-being and work stress. Compared with the overall working population, they reported higher rates of life and job dissatisfaction,

Measuring stress

To measure work stress, the CCHS employed an abbreviated version of Karasek's Job Content Questionnaire (JCQ). The CCHS measured work stress of respondents who worked at jobs or businesses in the past 12 months. Twelve items in the JCQ (for details see Park 2007) are used to measure job control, psychological demands, job insecurity, and social support at workplace. The job strain ratio was calculated by dividing the adjusted score for psychological demands by that of job control. A small constant (0.1) was added to numerator and denominator to avoid division by 0. To deal with outliers, scores were capped at 3. Respondents were classified as being in **high job strain** if the ratio was 1.2 or higher.

Respondents who strongly disagreed or disagreed with "your job security is good" were classified as having **job insecurity**. Respondents were classified as having **low social support at workplace** if they agreed or strongly agreed with being exposed to hostility or conflict from the people they work with or disagreed or strongly disagreed with supervisors' or co-workers' being helpful in getting the job done.

Additionally, respondents were asked if they were very satisfied, somewhat satisfied, not too satisfied, or not at all satisfied with their job. Those who were not too satisfied or not at all satisfied were classified as having **job dissatisfaction**.

Self-perceived work stress at the main job or business in the past 12 months was measured by asking whether most days at work were not at all stressful, not very stressful, a bit stressful, quite a bit stressful, or extremely stressful. Respondents answering quite a bit or extremely stressful were classified as having high self-perceived work stress.

job strain, major depression, and self-perceived negative mental health. This was particularly true for women, the regular forces, non-commissioned members and those who had to be away from home for longer-term deployment responsibilities.

Perspectives

Notes

1. The decrease in the 1990s was facilitated by the Forces Reduction Program (FRP), which offered a compensation package designed to entice members to take early release or retirement. The FRP resulted in the release of almost 14,000 members (Truscott and Dupre 1998).
2. Since the CCHS was conducted in 2002, the year of the first major wave of Canadian soldiers to Afghanistan, the sample did not include those on or returning from deployment. As well, it is unlikely that those awaiting imminent deployment would have participated in the

survey. For post-deployment health outcomes, see Zamorski and Galvin 2008 or US Department of Defense Task Force on Mental Health 2007.

3. Another component is the Special Force. According to Queen's Regulations and Orders for the Canadian Forces, (Chief of Defence Staff 2008), members of the regular forces and members of the reserve forces on active service or having applied for and been accepted for continuing full-time military service may be placed in a special force established and authorized by the Governor in Council in an emergency, or if considered desirable in consequence of any action undertaken by Canada under the *United Nations Charter*, the *North Atlantic Treaty* or any other similar instrument for collective defence.
4. In 2004, the compulsory retirement age for the CF was extended from 55 to 60.
5. Due to the increased number of recruits in recent years, in 2007 more than half of CF members had less than 10 years of service (DND 2008d).
6. This is much higher than the percentage of bilingual workers (46%) in the province of Quebec (data not shown).
7. Women's representation in the regular forces increased to 14% in 2007 (DND 2008d).
8. In 1989, a Human Rights Tribunal ordered the CF to fully integrate women into all occupations (except submarine service) by 1999. After the last barrier of submarine duty was lifted in 2001, all military occupations were open to women (Bourgon 2007; Chief Review Services 1998). Canada was the first NATO country to achieve this, although Norway, Denmark and Belgium have since followed.
9. Many allied nations including the UK still do not allow women in combat.
10. CF policy states that applicants must hold Canadian citizenship. However, a waiver may be granted by the Commander of the Canadian Forces Recruiting Group (CFRG) for exceptional cases: holders of Permanent Resident Status who possess specialized skills/qualifications the CF needs and cannot fill with a Canadian citizen and who do not pose a risk to any national interest (DND 2008f).
11. This also explains their relatively higher interest in the reserves, since the primacy of family, higher education, and professional (respectable) careers can still be pursued within the civilian sector (Jung 2007).
12. The data for public-sector employees include both full- and part-time workers.
13. Trades certificate or diploma, college diploma or certificate, university certificate, or bachelor's or post-graduate degree.

14. Strike used rates for all age groups, rather than 25 or older.
15. Many individuals join the reserves while attending university since the CF offers pay and summer jobs that may be ideal for students.
16. By 2007, 7% of women had served 25 or more years (DND 2008d).
17. This comparison is not perfect since some high-ranking non-commissioned personnel play the role of manager or supervisor.
18. The comparison with the general working population focuses on the regular forces because it is not known whether reservists refer to their military service or civilian job as the source of work stress.
19. Similarly, U.S. military personnel were reported to have higher job stress and dissatisfaction than their civilian counterparts (Pflanz and Sonnek 2002; Sanchez et al. 2004). According to a recent study, more than one-quarter of the military population studied reported significant job stress (Pflanz and Ogle 2006).
20. Similar findings were found in a U.S. study. For men, first deployments and longer deployments were associated with an increase in meeting criteria on one of the clinical scales. In contrast, women's overall primary screen rates remained relatively stable throughout the deployment, regardless of how long they were deployed or whether they had been previously deployed (Huffman et al. 2000).

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