

Spousal Employment Income of Canadian Forces Personnel: A Comparison of Civilian Spouses

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Abstract

The Spousal/Partner Employment and Income Project was a multi-phased, multi-year project that was carried out by the Director General Military Personnel Research and Analysis at the Canadian Department of National Defence. This article highlights some of the findings from the second phase of the project which examined the research question, “What is the employment income of Canadian Forces spouses compared to spouses of similar groups?”. Utilizing data from the 2006 long-form Census conducted by Statistics Canada, the employment income differences of Canadian Forces female spouses compared to female spouses of federal and provincial police personnel, federal public servants and other civilians were explored. Specifically, the impact of socio-demographic characteristics such as age, education, employment status, first official language, number of children in the home, place of residence one year and five years before the Census, presence of young children in the home, region, school attendance, and visible minority status were used to predict average spousal employment incomes. Research was also conducted into the differences between the spouses of Canadian Forces Non-Commissioned Members and the spouses of Canadian Forces Officers. In general, results showed that Canadian Forces spouses had lower average employment incomes than spouses of federal and provincial police personnel, federal public servants and other civilians. Among Canadian Forces personnel, spouses of Non-Commissioned Members had lower average employment incomes than spouses of Officers.

Keywords: age; census; Canadian Forces spouses; children; education; first official language; income; mobility; region

Introduction

The retention of military personnel is influenced by the degree to which military spouses² (and personnel) experience satisfaction with their employment, income and the military lifestyle (Dursun & Sudom, 2008; Ewins, 2000; Jenkins, 2003; Parker, 1991; Pépin, Sudom & Dunn, 2006). Although some empirical studies on military spousal employment income have been conducted in the United States (U.S.), minimal research in this area has been carried out on

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² Within this article, the term “spouse” refers to individuals who are female and are not in the military.

Canadian Forces (CF) spouses. The aim of this article is to examine the employment income of CF female spouses in comparison to female spouses of other similar groups by exploring some key socio-demographic variables that may impact spousal employment income.

Literature Review

Spousal Income Comparison

A number of studies on military spousal employment income have been conducted in the U.S. For example, in the 1970s, research showed that the unemployment rate was higher and average employment incomes were lower for spouses in military families compared to spouses in civilian families (Grossman, 1981; Hayghe, 1974; Schwartz, 1990). Additionally, within military families, the results of the 1979 Department of Defense Pay Adequacy Study demonstrated that spouses of junior military members (e.g., Privates) made less employment income in 1975 than spouses of military officers (cited in Grossman, 1981).

Using two U.S. Census Public Use Microdata Samples (PUMS) (the 1% and the 5% sample files), Harrell and colleagues (2004) compared annual incomes between military spouses and civilian spouses. It was found that in 1990, spouses of U.S. Air Force, Army, Marine Corps and Navy personnel earned approximately \$5,500 to \$7,400 less than their civilian counterparts. This research also showed that military spouses earned roughly three dollars per hour less than civilian spouses. Another study by Hosek and colleagues (2002) used data drawn from the 1988-2000 Current Population Survey (CPS) March Supplement and compared earnings of military families with civilian families. In their research, it was found that on average, military families earned approximately \$10,000 less (in 1999) than civilian families, partly due to the lower employment incomes made by spouses in military families. By controlling for socio-demographic differences (e.g., age, area of residence, education, number of children, etc.), it was

further revealed that spouses of military personnel were less likely to be employed (or to be employed full-time), and that their weekly earnings were lower than spouses in civilian families.

Using two consecutive administrations of the U.S. Survey of Income and Program Participation (SIPP), Hisnanick and Little (2010) compared military family incomes with civilian family incomes between 1996 and 2003. Findings in this study revealed that on average, military families earned approximately \$7,000 to \$14,000 less than their civilian counterparts each year. When comparing the income contributions of the spouse to the annual family income, it was also found that military spouses made lower contributions (varying from 1.6% to 8.9%) each year. Lipari (2006) also examined the differences in financial well-being (income, total household savings) between military and civilian families, based on a military family sample drawn from the 1999 Survey of Spouses of Active Duty Personnel and a civilian family sample drawn from the 1998 Survey of Consumer Finances. The results indicated that the level of financial well-being of military families was lower than that of civilian families. Additionally, spouses in military families were less likely to be employed than spouses in civilian families.

In the Canadian context, minimal research on the employment income of CF spouses has been carried out. Until recently, when the Spousal/Partner Employment and Income Project was undertaken (Coulthard & Dunn, 2009; Dunn, Urban, & Wang, 2010; Dunn, Urban & Wang, 2011), Truscott (1995) conducted the only study focusing on spousal employment and income in the CF. Based on 1981, 1986 and 1991 Statistics Canada Census data, the results of Truscott's work showed that the average spousal employment income of CF personnel was substantially lower than Federal Public Service spouses (approximately \$12,500, \$13,800 and \$14,800 respectively).

Key Variables

Among the empirical studies discussed above, researchers have controlled for a variety of variables when examining military spousal employment income. These variables include age, education, number of children, mobility, ethnicity, region, etc. In addition, Coulthard & Dunn (2009) suggest that the impact of First Official Language (FOL)³ and rank of the military member is important to consider when examining spousal employment income.

Spousal/Partner Employment and Income Project

The Spousal/Partner Employment and Income (SPEI) project was a multi-phased, multi-year project carried out between 2008-2011 by the Director General Military Personnel Research and Analysis at the Canadian Department of National Defence (see Coulthard & Dunn, 2009; Dunn, Urban & Wang, 2010; Dunn, Urban & Wang, 2011). This article highlights some results from the second phase of the project which examined the research question, “What is the employment income of Canadian Forces spouses compared to spouses of similar groups?”.

Methodology

Data Source

The data used in this article stems from the 2006 long-form Census⁴ conducted by Statistics Canada. The population of interest used for the SPEI project was female spouses and included:

- (1) opposite-sex couples (married or common-law) living together in a private household;
- (2) couples where the male was defined as being:
 - (a) in the CF;

³ With Canada having two Official Languages (English and French), it is possible that a French speaking spouse could be living in an English speaking community and vice-versa. This could possibly impact spousal ability to find and maintain employment.

⁴ See <http://www12.statcan.gc.ca/census-recensement/2006/ref/question-guide-eng.cfm> for further details.

(b) a member of the Royal Canadian Mounted Police (RCMP), Ontario Provincial Police (OPP) or Sureté du Québec⁵;

(c) a Federal Public Servant (FPS); or

(d) an Other Civilian (OC); and

(3) couples where the male (CF, Police, FPS or OC) had to be between 17-55 years old⁶.

Same-sex couples, CF dual-service couples, couples living abroad or living in a collective household such as military barracks and members of the Canadian Reserve Force, unless they declared their job or business the week before the 2006 long-form Census to be in the CF were excluded from the analyses.

Weighting

Table 1: Female Spousal Group Definitions

Group		Sample Size	Estimated Population Size ⁷	Definition
CF	All	5,945	30,670	Female spouses of male CF personnel
	Officer	1,805	9,195	Female spouses of male CF Officers
	NCM	4,140	21,475	Female spouses of male CF Non-Commissioned Members (NCMs)
Police		3,745	18,205	Female spouses of male RCMP, OPP or Sureté du Québec personnel
FPS		16,785	83,780	Female spouses of male FPS
OC		903,865	4,472,410	Female spouses of males who were not defined as CF, Police or FPS

After weight adjustments, estimations of population parameters based on the data were calculated⁸. As shown in Table 1, couples included in the population were separated into four

⁵ Throughout the remainder of this article, this group will be referred to as “Police”.

⁶ Couples had to satisfy all three criteria to be included in the data analysis for the SPEI project.

⁷ Randomly rounded values.

⁸ See details of the weighting and data adjustment as well as population estimations at http://www12.statcan.ca/census-recensement/2006/ref/rp-guides/rp/sw-ep/sw-ep_index-eng.cfm.

main groups (CF, Police, FPS and OC). In addition, the CF group was further broken down into Non-Commissioned Members (NCMs) and Officers.

Descriptive Results

Spousal Socio-Demographic Characteristics of CF, Police, FPS and OC

Socio-demographic characteristics of CF, Police, FPS and OC spouses are shown in Table 2.

When comparing spouses of the four groups, spouses of CF personnel had fewer children in the home ($p < .001$)⁹. Additionally, spouses of CF personnel¹⁰ were:

- youngest ($p < .001$);
- less likely to have a university level education ($p < .001$);
- more likely to report English as their FOL ($p < .001$);
- more likely to live in Atlantic¹¹ Canada ($p < .001$); and
- more likely to move provincially in a one-year and five-year period ($p < .001$).

Lastly, spouses of CF personnel¹² were:

- less likely to be visible minorities ($p < .001$);
- more likely to attend school¹³ (FPS: $p = .003$; OC: $p = .004$); and
- more likely to have young children¹⁴ at home (FPS: $p < .001$; OC: $p = .009$).

⁹ The p-value represents the CF/Police and CF/OC pair-wise comparisons. Little differences were found when comparing spouses of CF and FPS.

¹⁰ The p-values relating to age, education, FOL, region and mobility represent all possible pair-wise comparisons.

¹¹ Atlantic Canada includes New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island.

¹² The p-value relating to visible minority status represent the CF/FPS and CF/OC pair-wise comparisons. Little differences were found when comparing spouses of CF and Police.

¹³ School attendance must have taken place in the last six months before the 2006 long-form Census.

¹⁴ A young child was defined as being five years old or younger.

Table 2: Female Spousal Socio-Demographic Characteristics by Group¹⁵

Socio- Demographics		CF	Police	FPS	OC
Age	Less than 25	7.8%	3.7%	2.8%	5.4%
	25-34	31.0%	28.5%	23.3%	26.4%
	35-44	39.1%	39.0%	35.4%	36.3%
	45+	22.1%	28.8%	38.4%	32.0%
Education	Less than High School	6.9%	2.7%	4.1%	11.1%
	High School Completion	24.5%	21.3%	20.5%	25.4%
	Some or all college	45.9%	46.5%	37.3%	38.4%
	Bachelor's degree	16.8%	23.1%	24.6%	17.1%
	More than Bachelor's degree	5.9%	6.5%	13.4%	8.0%
FOL ¹⁶	English	74.7%	68.2%	69.1%	74.8%
	French	24.9%	31.4%	29.8%	23.2%
Number of Children	No Children	31.0%	27.0%	30.9%	28.7%
	One Child	24.2%	21.0%	23.9%	23.6%
	Two Children	33.5%	36.9%	33.0%	32.8%
	Three or More Children	11.3%	15.2%	12.2%	14.9%
Place of Residence - One Year Before the Census	Same dwelling	77.1%	82.8%	86.8%	84.4%
	Same CSD ¹⁷ ; different dwelling	7.1%	5.6%	6.9%	8.9%
	Different CSD; same province	6.4%	8.2%	3.4%	4.5%
	Different province	8.2%	3.3%	2.1%	1.0%
	Outside Canada	1.2%	0.2%	0.8%	1.2%
Place of Residence - Five Years Before the Census	Same dwelling	29.8%	41.8%	52.3%	50.9%
	Same CSD; different dwelling	20.3%	16.7%	23.8%	25.1%
	Different CSD; same province	19.0%	29.5%	12.8%	15.2%
	Different province	27.4%	11.3%	8.0%	3.2%
	Outside Canada	3.5%	0.7%	3.1%	5.5%
Presence of Young Children at Home	No Young Children at Home	72.1%	72.5%	76.9%	73.8%
	Young Children at Home	27.9%	27.5%	23.1%	26.2%
Region	British Columbia	10.1%	16.6%	10.2%	12.7%
	Prairies ¹⁸ & Territories	16.0%	15.9%	12.5%	18.0%
	Ontario	31.3%	31.1%	39.8%	38.5%
	Quebec	18.2%	25.9%	23.8%	23.5%
	Atlantic	24.1%	9.0%	13.3%	7.0%
School Attendance	Did Not Attend School	87.3%	86.4%	88.8%	88.5%
	Attend School	12.8%	13.6%	11.2%	11.5%
Visible Minority	Not a Visible Minority	93.9%	92.6%	86.6%	80.3%
	Visible Minority	3.3%	4.0%	10.7%	16.6%
	Aboriginal Self-Reporting	2.8%	3.4%	2.7%	3.1%

¹⁵ Due to 2006 long-form Census confidentiality rules, percentages may not add up to 100%.

¹⁶ A small percentage in each group (1.0% or less) reported "English and French" or "Neither English or French" as their FOL.

¹⁷ CSD stands for Census Sub-Division.

¹⁸ The Prairies and Territories include: Alberta, Manitoba, Saskatchewan, Yukon Territories, Northwest Territories and Nunavut.

Table 3: Female Spousal Socio-Demographic Characteristics by CF NCM and CF Officer

Socio- Demographics		CF NCM	CF Officer
Age	Less than 25	9.7%	3.5%
	25-34	32.0%	28.6%
	35-44	38.0%	41.7%
	45+	20.3%	26.1%
Education	Less than High School	8.2%	3.8%
	High School Completion	27.3%	17.9%
	Some or all college	48.7%	39.5%
	Bachelor's degree	12.1%	27.7%
	More than Bachelor's degree	3.7%	10.9%
FOL	English	71.9%	81.0%
	French	27.5%	18.7%
Number of Children	No Children	32.5%	27.7%
	One Child	24.8%	22.7%
	Two Children	32.1%	36.6%
	Three or More Children	10.6%	13.0%
Place of Residence - One Year Before the Census	Same dwelling	77.2%	77.0%
	Same CSD; different dwelling	8.1%	4.6%
	Different CSD; same province	6.5%	6.3%
	Different province	7.6%	9.6%
	Outside Canada	0.6%	2.5%
Place of Residence - Five Years Before the Census	Same dwelling	30.3%	28.5%
	Same CSD; different dwelling	21.7%	16.9%
	Different CSD; same province	20.3%	16.0%
	Different province	25.3%	32.3%
	Outside Canada	2.4%	6.3%
Presence of Young Children at Home	No Young Children at Home	73.0%	70.2%
	Young Children at Home	27.1%	29.8%
Region	British Columbia	9.5%	11.5%
	Prairies & Territories	16.1%	15.8%
	Ontario	28.2%	38.4%
	Québec	21.0%	11.5%
	Atlantic	24.9%	22.2%
School Attendance	Did Not Attend School	87.3%	87.1%
	Attend School	12.7%	12.9%
Visible Minority	Not a Visible Minority	93.5%	94.7%
	Visible Minority	3.2%	3.6%
	Aboriginal Self-Reporting	3.3%	1.7%

Spousal Socio-Demographic Characteristics of CF NCMs and CF Officers

Socio-demographic characteristics of CF NCM and CF Officer spouses are shown in Table 3. When comparing the spouses of the two groups, there were no statistically significant differences in terms of school attendance and the presence of young children at home. In addition, spouses of CF NCMs were:

- less likely to have a university level education ($p < .001$);
- less likely to move provincially in a one-year and five-year period ($p < .001$);
- more likely to have less children ($p < .001$);
- more likely to be younger ($p < .001$);
- more likely to self-report as Aboriginal ($p = .003$)
- more likely to live in Quebec ($p < .001$); and
- more likely to report French as their FOL ($p < .001$).

Spousal Employment Status

Prior to examining spousal employment income, differences in spousal employment status were explored. Overall, results showed that CF spouses were less likely to be employed than Police, FPS and OC spouses ($p < .001$ respectively). Specifically, CF spouses had the lowest percentage of spousal employment (73.4%), followed by OC (77.2%), Police (80.5%), and FPS (81.2%) spouses. As a result, CF spouses had the highest percentage of spousal unemployment¹⁹ (5.1%), followed by OC (4.3%), FPS (3.7%) and Police (3.5%) spouses. CF personnel also had the highest percentage of spouses “not in the labour force” (21.5%) followed by OC (18.6%), Police (16.1%) and FPS (15.1%) spouses. When comparing CF NCM and CF

¹⁹ “Unemployed” spouses were those spouses who were not in the labour force and were seeking employment. “Not in the Labour Force” spouses were those spouses who were not in the labour force and were not seeking employment.

Officer spouses, findings revealed that CF NCM spouses (74.9%) were more likely to be employed than CF Officer spouses (70%), and were less likely to be “unemployed” (4.7%) or “not in the labour force” (20.4%) than CF Officer spouses (5.9% and 24% respectively)²⁰.

Spousal Employment Income of CF, Police, FPS and OC

Table 4 reveals that the employment incomes of CF spouses were more likely to be in the lower income categories than Police, FPS and OC spouses ($p < .001$ ²¹). For example, CF spouses had the lowest percentage (6.7%) in the “\$60,000 or more” employment income category compared to OC (9.9%), Police (16.1%), and FPS (19.2%) spouses. Similarly, in the employment income category of “\$40,000 - \$59,999”, CF spouses also had the lowest percentage (12.7%), followed by OC (14.5%), Police (18.3%) and FPS (22.3%) spouses. In contrast, CF spouses had the highest percentage (16.4%) in the “\$0” employment income category, the highest percentage (12.6%) in the “less than \$5,000²²” employment income category and the highest percentage (27.1%) in the “\$5,000-\$19,999” employment income category.

Table 4: Spousal Employment Income Categories by Group

Employment Income Category	CF	Police	FPS	OC
\$60,000 or more	6.7%	16.1%	19.2%	9.9%
\$40,000 - \$59,999	12.7%	18.3%	22.3%	14.5%
\$20,000 - \$39,999	24.5%	27.3%	22.9%	27.6%
\$5,000 - \$19,999	27.1%	18.7%	17.0%	24.0%
Less than \$5,000	12.6%	8.0%	6.7%	9.1%
\$0	16.4%	11.5%	12.0%	15.1%

Spousal Employment Income of CF NCMs and CF Officers

The employment incomes of CF NCM spouses were more likely to be in the lower income categories than CF Officer spouses²³ (see Table 5). For example, with the exception of

²⁰ $p = .002$.

²¹ The p-value represents all pair-wise comparisons (CF/Police, CF/FPS and CF/OC).

²² The income category “less than \$5,000” also includes those individuals who made negative income (e.g., a self employed person who ended the year with a loss).

²³ $p < .001$.

the “\$0” income category, CF NCM spouses had higher percentages in the “less than \$5,000”, “\$5,000-\$19,999” and “\$20,000-\$39,999” employment income categories (12.8%, 29.6% and 25.2% respectively) compared to CF Officer spouses (12.2%, 21.2% and 22.9% respectively). In contrast, CF NCM spouses had lower percentages in the “\$60,000 or more” and “\$40,000-\$59,999” employment income categories (5.1% and 12.2% respectively) compared to CF Officer spouses (10.5% and 13.9% respectively).

Table 5: Spousal Employment Income Categories by CF NCM and CF Officer

Employment Income Category	CF NCM	CF Officer
\$60,000 or more	5.1%	10.5%
\$40,000 - \$59,999	12.2%	13.9%
\$20,000 - \$39,999	25.2%	22.9%
\$5,000 - \$19,999	29.6%	21.2%
Less than \$5,000	12.8%	12.2%
\$0	15.2%	19.4%

Average Spousal Incomes of CF, Police, FPS and OC

Table 6 shows the average 2005 spousal employment and total incomes of the different groups. In 2005, CF spouses had the lowest average employment income (\$21,967), followed by OC (\$27,030), Police (\$32,316) and FPS (\$35,724) spouses. Thus, CF spouses had an average employment income that was \$5,063 less than OC, \$10,349 less than Police and \$13,757 less than FPS spouses.

When examining total income²⁴, CF spouses also had the lowest amount (\$24,961), followed by OC (\$31,038), Police (\$35,366) and FPS (\$38,874) spouses. In other words, CF spouses had an average total income that was \$6,077 less than OC, \$10,405 than Police and \$13,913 less than FPS spouses.

²⁴Total income includes the sum of employment income and other income. Due to the exhaustive list of different types of “other” income, specific categories and dollar amounts are not presented in this article.

Table 6: Average 2005 Spousal Income by Group

Type of Income	CF	Police	FPS	OC
Average Employment Income	\$21,967	\$32,316	\$35,724	\$27,030
Standard Error	\$234	\$420	\$197	\$31
Average Total Income	\$24,961	\$35,366	\$38,874	\$31,038
Standard Error	\$251	\$440	\$211	\$37

Average Spousal Incomes of CF NCMs and CF Officers

The average 2005 spousal employment and total incomes of CF NCMs and CF Officers are displayed in Table 7. In 2005, CF NCM spouses had a lower average employment income (\$20,825) than CF Officer spouses (\$24,639). Accordingly, CF NCM spouses had an average employment income that was \$3,814 less than CF Officer spouses. When examining total income, CF NCM spouses also had the lower amount (\$23,861) compared to CF Officer spouses (\$27,530). In other words, CF NCM spouses had an average total income that was \$3,669 less than CF Officer spouses.

Table 7: Average 2005 Spousal Income by CF NCM and CF Officer

Type of Income	CF NCM	CF Officer
Average Employment Income	\$20,825	\$24,639
Standard Error	\$255	\$494
Average Total Income	\$23,861	\$27,530
Standard Error	\$272	\$545

Average Employment and Total Income of CF, Police, FPS and OC Households²⁵

Table 8 demonstrates the average employment and total household incomes by different groups. OC households had the lowest average employment income (\$81,558), followed by CF (\$85,159), FPS (\$100,774) and Police (\$108,855) households. Therefore, CF households had an average employment income that was \$3,601 more than OC, \$15,615 less than FPS and \$23,696 less than Police households.

In terms of total income, OC households also had the lowest amount (\$88,879),

²⁵ “Household” includes the defining member (CF, Police, FPS and OC) and their spouse. It does not include other family members that may be living in the same household (e.g., parent, sibling, etc.).

followed by CF (\$90,204), FPS (\$105,987) and Police (\$113,323). Hence, CF households had an average total income that was \$1,325 more than OC, \$15,783 less than FPS and \$23,119 less than Police households.

Table 8: Average 2005 Employment and Total Household Income by Group

Type of Income	CF	Police	FPS	OC
Average Employment Income	\$85,159	\$108,855	\$100,774	\$81,558
Standard Error	\$419	\$637	\$343	\$100
Average Total Income	\$90,204	\$113,323	\$105,987	\$88,879
Standard Error	\$411	\$623	\$340	\$118

Average Employment and Total Income of CF NCM and CF Officer Households

The average employment and total household incomes by CF NCM and CF Officer are represented in Table 9. CF NCM households had a lower average employment income (\$77,155) than CF Officer households (\$103,847). Thus, CF NCM households had an average employment income that was \$26,692 less than CF Officer households.

Looking at total income, CF NCM households also had a lower average total income (\$82,179) compared to CF Officer households (\$108,942). In other words, CF NCM households had an average total income that was \$26,763 less than CF Officer households.

Table 9: Average 2005 Employment and Household Income by CF NCM and CF Officer

Type of Income	CF NCM	CF Officer
Average Employment Income	\$77,155	\$103,847
Standard Error	\$422	\$867
Average Total Income	\$82,179	\$108,942
Standard Error	\$409	\$857

Spousal Contribution of Average Employment and Total Income in CF, Police, FPS and OC Households

Table 10 illustrates the percentages of average employment and total income contributed by spouses and defining members in households by group. Across all groups, the defining member (CF, Police, FPS and OC) contributed a higher percentage of employment and total income to their households. Looking at the spousal contributions, CF spouses contributed the

lowest percentages of employment income (25.8%), followed by Police (29.7%), OC (33.1%) and FPS (35.4%) spouses. As a result, CF spouses contributed 3.9% less employment income than Police, OC (7.3%) and FPS (9.6%) spouses in their households. Regarding average total income, CF spouses also contributed the lowest percentage to their household (27.7%), followed by Police (31.2%), OC (34.9%) and FPS (36.7%) spouses.

Table 10: Spousal Contribution of Employment and Total Income by Group

Group	Household Member	Employment Income	Total Income
CF	Spouse	25.8%	27.7%
	Defining Member	74.2%	72.3%
Police	Spouse	29.7%	31.2%
	Defining Member	70.3%	68.8%
FPS	Spouse	35.4%	36.7%
	Defining Member	64.6%	63.3%
OC	Spouse	33.1%	34.9%
	Defining Member	66.9%	65.1%

Spousal Contribution of Average Employment and Total Income in CF NCM and CF Officer Households

The percentages of average employment and total income contributed by spouses and defining members in CF NCM and CF Officer households are presented in Table 11. Both CF NCMs and CF Officers contributed a higher percentage of employment income (73.0% and 76.3% respectively) and total income (71.0% and 74.7% respectively) to their households than their spouses.

Table 11: Spousal Contributions of Employment and Total Income by CF NCM and CF Officer

Group	Household Member	Employment Income	Total Income
CF NCM	Spouse	27.0%	29.0%
	Defining Member	73.0%	71.0%
CF Officer	Spouse	23.7%	25.3%
	Defining Member	76.3%	74.7%

Linear Regression Modeling of Spousal Employment Income

To explore the relationships between socio-demographic characteristics and spousal

employment income among CF NCMs, CF Officers, Police and FPS²⁶, a linear regression analysis was conducted by controlling for key variables such as “the number of weeks worked” and the “work status of full-time/part-time”²⁷. Socio-demographic variables from the 2006 long-form Census (e.g., age, region) were examined and included/excluded in the linear regression model by following five steps:

- (1) After the variability in the data was explained by the group (CF NCM, CF Officer, Police or FPS) to which spouses belonged, each socio-demographic characteristic was examined individually to determine whether it explained some of the variability in the data. If the obtained p-value of one variable was less than .25, the variable was brought to the next model;
- (2) The variables in the new model were eliminated one at a time until all remaining variables had p-values less than .10;
- (3) All two-way interactions of the remaining variables were added to the next model and then some were eliminated one at a time until all remaining interactions had p-values less than .05;
- (4) If there appeared to be model estimation problems due to no sample in some combinations of variables, the collapsing of the categories of one or more of the explanatory variables was considered; and
- (5) Hosmer-Lemeshow test (Hosmer & Lemeshow, 1989) results for the last new model were examined, and if the model fit seemed poor, the addition or subtraction of additional

²⁶ As the primary groups of interest for the SPEI project were CF, Police and FPS, the OC group was not included in the linear regression modeling.

²⁷ Due to statistical concerns, the dependent variable was determined to be *log(Employment Income)*; and “the number of weeks worked” was determined to be *log(weeks worked)*. It should be noted that spouses with extreme high and low employment income (less than \$500 or higher than \$150,000) and the spouses who worked less than one week were excluded from the analysis.

variables was considered.

The final linear regression model included variables such as spousal employment status, level of education (for both the spouse and the defining member), group membership, number of children at home, presence of young children at home, region, spousal age, spousal first official language, spousal place of residence one year and five years before the 2006 Census, spousal school attendance and spousal visible minority status (see Table 12). The model can explain 52.8% of the variance.

Table 12: Summary Table of Variables in the Model²⁸

Contrast	Degrees of Freedom	Wald F	P-value
Model Minus Intercept	192	462.59	<.001
Log (Number of weeks worked)	1	2240.32	<.001
Number of children at home	3	19.20	<.001
Group * Spousal Employment Status	3	5.72	.001
Group * Spousal Level of Education	12	2.53	.003
Group * Defining Member Level of Education	12	2.27	.007
Group * Spousal School Attendance	3	4.28	.005
Group * Presence of Young Children at Home	3	3.11	.025
Group * Spousal Region	56	2.14	<.001
Group * Spousal Place of Residence One Year Before Census	12	1.94	.026
Group * Spousal FOL	6	2.12	.048
Spousal Age * Spousal Level of Education	12	4.52	<.001
Spousal Place of Residence One Year Before Census* Spousal Place of Residence Five Years Before Census	16	2.08	.007
Spousal Level of Education* Spousal Visible Minority Status	4	4.74	.001
Spousal Age * Spousal Visible Minority Status	3	2.80	.038

The predicted average employment incomes if all spouses of a group hypothetically changed group membership were calculated based on the linear regression model (see Table 13). For example, if all CF NCM spouses kept all of their socio-demographic characteristics but hypothetically became CF Officer spouses, their average employment income would increase from \$21,877 to \$24,059 (by \$2,182). In contrast, if CF Officer spouses kept all of their socio-demographic characteristics but hypothetically became CF NCM spouses, their average income

²⁸ The modeling exercise was conducted using SUDAAN.

would decrease from \$25,982 to \$24,539 (by \$1,443).

In addition, if all CF Officer spouses hypothetically became Police or FPS spouses, their average income would increase from \$25,982 to \$30,783 (by \$4,801) and \$29,327 (by \$3,345), respectively. Similar trends can be found if all CF NCM spouses hypothetically became Police or FPS spouses. These trends demonstrate the impact of group membership on spousal employment income such that:

- a. CF NCM and CF Officer spouses were more likely to have a lower employment income than Police or FPS spouses; and
- b. CF NCM spouses were more likely to have a lower employment income than CF Officer spouses.

Table 13: Average Hypothesized Spousal Employment Incomes by Group

Actual Group	Hypothesized Group			
	CF NCM	CF Officer	Police	FPS
CF NCM	\$21,877	\$24,059	\$28,606	\$26,362
CF Officer	\$24,539	\$25,982	\$30,783	\$29,327
Police	\$25,557	\$28,245	\$32,411	\$31,095
FPS	\$29,085	\$31,161	\$36,350	\$35,627

Discussion and Conclusion

Overall, when examining the research question, “What is the employment income of Canadian Forces spouses compared to spouses of similar groups?”, findings from the second phase of the SPEI project demonstrated that there are statistically significant differences in the socio-demographic characteristics of CF spouses compared to spouses in non-military families. Even when controlling for key socio-demographics variables (e.g., age, education, etc.), of importance for the CF, group membership has an impact on spousal employment income. Specifically, being a CF spouse (whether NCM or Officer) results in lower employment income compared to spouses in non-military families.

When examining employment income, it was found that CF spouses earn \$5,063 less than OC, \$10,349 less than Police and \$13,757 less than FPS spouses. These data confirm previous U.S. findings by Hosek et al. (2002) and Canadian findings (Truscott, 1995) that spouses in military families have lower employment incomes than spouses in non-military families.

This research also allowed for the identification of key socio-demographic variables for possible further data analysis in the area of spousal employment income. Specifically, it was found that variables such as age, education, place of residence five years before the Census, presence of young children at home and region do play a role in predicting spousal employment income. These results also confirm previous Canadian and U.S. research which suggested that spousal socio-demographic characteristics (e.g., age, education) may be associated with spousal employment income.

References

- COULTHARD, J. & J. DUNN, “Canadian Forces Spousal/Partner Employment and Income Project: Research Framework and Methodology”, *Director General Military Personnel Research and Analysis Technical Memorandum 2009-012*, Ottawa, Ontario, Canada, 2009.
- DUNN, J., S. URBAN & Z. WANG, “Spousal/Partner Employment and Income (SPEI) Project: How Do Canadian Forces Spouses Compare?”, *Director General Military Personnel Research and Analysis Technical Memorandum 2010-028*, Ottawa, Ontario, Canada, 2010.
- DUNN, J., S. URBAN & Z. WANG, “Spousal/Partner Employment and Income (SPEI) Project: Phase Three and Final Report”, *Director General Military Personnel Research and Analysis Technical Report (Forthcoming)*, Ottawa, Ontario, Canada, 2011.
- DURSUN, S. & K. SUDOM, “Effects of Perstempo on Morale in the Canadian Forces”, *Defence Research and Development Canada Centre for Operational Research and Analysis Technical Memorandum 2008-18*, Ottawa, Ontario, Canada, 2008.
- EWINS, J.E.M., “CF Household Survey”, *Director Human Resources Research and Evaluation Reaction Research Report 00-1*, Ottawa, Ontario, Canada, 2000.

GROSSMAN, A.S., “The Employment Situation for Military Wives”, *Monthly Labor Review*, Vol. 104, 60–64, 1981.

HARRELL, M.C., N. LIM, L.W. CASTANEDA & D. GOLINELLI, “Working around the military: Challenges to military spouse employment and education”. *RAND National Defence Research Institute*. Retrieved from http://www.rand.org/pubs/monographs/2004/RAND_MG196.pdf., Santa Monica, California, 2004.

HAYGHE, H., “Military and Civilian Wives: Update on the Labor Force Gap”, *Monthly Labor Review*, Vol. 82, No. 2, Pt. 2, 1974.

HISNANICK, J.L. & R.D. LITTLE, “Comparing US civilian and military family incomes: Accounting of earnings shortfalls and compensation difference”, *Res Militaris*, Vol 1(1), Retrieved from http://resmilitaris.net/ressources/10123/65/6_res_militaris_article_hisnanick_little_texte_inte_gral.pdf, 2010.

HOSEK, J., B. ASCH, C. FAIR, C. MARTIN & M. MATTOCK, “Married to the Military: The Employment Earnings of Military Wives Compared to Those of Civilian Wives”, *RAND Corporation*, Santa Monica, California, 2002.

<http://www.12.statcan.gc.ca/census-recensement/2006/ref/question-guide/eng.cfm>

HOSMER, D.W. & S. LEMESHOW, *Applied Logistic Regression*, John Wiley & Sons, Inc., New York City, New York, 1989.

JENKINS, D.A., “Voluntary Attrition from the Canadian Forces: Qualitative Analysis of Data from the Revised Canadian Forces Attrition Information Questionnaire (CFAIQ-R)”, *Director Human Resources Research and Evaluation Sponsor Research Report 2003-15*, Ottawa, Ontario, Canada, 2003.

LIPARI, R.N., “The Financial Well-Being of Military Families”, Dissertation submitted to the Faculty of the Graduate School of the University of Maryland at College Park, 2006.

PARKER, R.O., “Officer Attrition Related to Terms of Service”, *Canadian Forces Personnel Applied Research Unit Technical Note 9/91*, Ottawa, Ontario, Canada, 1991.

PÉPIN, K., K. SUDOM., & J. Dunn, “Your-Say: Quality of Life”, *Defence Research Development Canada Centre for Operational Research and Analysis Technical Memorandum 2006-41*, Ottawa, Ontario, Canada, 2006.

SCHWARTZ, J.B., “Labor Force Participation, Employment, and Earnings of Married Women: A Comparison of Military and Civilian Wives”, *United States Army Research Institute for the Behavioral and Social Sciences ARI Research Note 90-67*, 1990.

TRUSCOTT, S., 'Military Spousal Employment and Loss of Income'. *Directorate of Social and Economic Analysis Operational Research and Analysis Project 712*, Ottawa, Ontario, Canada, 1995.