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Survey on Transition to Civilian Life: Report on Regular Force Veterans

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Foreword

Bernard Butler, A/ADM Policy, Programs and Partnerships, VAC

“Military service can be demanding, yet there is little information available about the physical, mental and social health consequences after release. The results of this study, a component of the Life After Service Studies program of research, will support the development of programs and policies on transition and re-establishment of Canadian Forces personnel in civilian life. Veterans Affairs Canada is pleased to partner with the Department of National Defence/Canadian Forces and Statistics Canada on this groundbreaking research initiative which, for the first time, compares transition and health outcomes of those who receive benefits from our Department and those who do not, providing valuable insights into unmet needs and reach.”

Approved: _____



Bernard Butler
A/Assistant Deputy Minister



Date

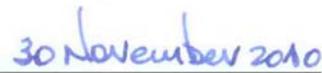
RAdm Andy Smith, Chief Military Personnel, DND

“The transition from the military to civilian life is a critical passage for Canadian Forces members, some of whom leave the Canadian Forces voluntarily after a short period of service, while others retire after 30 or 35 years of service. Sadly, some members are injured in service to their country and must make this transition under much more difficult circumstances. It is crucial, therefore, that the policies, practices and programs of both the Department of National Defence and Veterans Affairs Canada are developed in a complementary fashion, with the common goal of enabling the healthy re-establishment of these soldiers, sailors, airmen and airwomen in civilian life. This study is a component of the Life after Services Study, a partnership between the Department of National Defence, Veterans Affairs Canada and Statistics Canada. I look forward to future collaborative research of this nature, which will ensure better-informed, better-synchronized policy in both Departments, to the ultimate benefit of the men and women who have served our Nation with pride and valour.”

Approved: _____



Rear-Admiral A. Smith
Chief Military Personnel



Date

Survey on Transition to Civilian Life: Report on Regular Force Veterans

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Survey on Transition to Civilian Life: Report on Regular Force Veterans

Executive Summary

Background

Military to civilian transition is an important but poorly researched event in the life course of military Veterans. In this report, Veterans are former Canadian Forces personnel who have released from the military, regardless of length of service. Veterans experiencing difficulties with re-establishment can be provided assistance through Veterans Affairs Canada (VAC) programs. Previous population health data for CF Veterans receiving benefits from VAC was becoming dated, and Veterans not receiving benefits from VAC had never been surveyed comprehensively. A more complete evidence base is needed to meet modern re-establishment needs of Veterans, including evaluation of the New Veterans Charter (NVC) programs initiated in 2006, and other programs established by VAC and the Department of National Defence/Canadian Force (DND/CF).

Objective

The objective of the *Survey on Transition to Civilian Life (STCL)* was to measure the health, disability and determinants of health of former Regular Force personnel after release from service.

Design

A cross-sectional survey was conducted by Statistics Canada using computer-assisted telephone survey interviews during February and March 2010. The sample was stratified into three groups: VAC clients receiving benefits from VAC's NVC programs (NVC clients), VAC clients receiving disability pensions but not receiving NVC benefits from VAC (DP clients), and Veterans not receiving benefits from VAC (non-clients).

Participants

Respondents were Canadian Forces (CF) Regular Force Veterans who released from service between January 1, 1998 and December 31, 2007. Sampling excluded those who had re-entered the CF and were serving at the time of the survey, were living in the Territories or outside Canada, were residing in long-term care facilities, or were deceased. Of the Veterans sampled, the response rate was 71%, and 94% agreed to share responses with VAC and DND, providing a nationally representative sample of 3,154. The STCL population was very heterogeneous, with a broad mix of service and sociodemographic characteristics:

- 8% were NVC clients, 26% DP clients, and 66% non-clients.
- Enrolled in the CF from the 1960s onward.
- Average age 46 years (range 20-67).
- 12% female.
- 76% married or common-law.
- 53% served 20 years or more.
- 65% had deployed.
- 65% were non-commissioned members at release, and 19% were recruits or cadets.
- 53% had greater than high school education at the time of the survey and 7% reported less than high school graduation.
- 57% released voluntarily and 24% were released for medical reasons.

Findings

This report is a descriptive overview of more than 40 indicators of health, disability and determinants of health collected in the survey. Highlights include:

1. Two-thirds (62%) of CF Regular Force Veterans who released from service during 1998-2007 reported an easy adjustment to civilian life, and a quarter (25%) of the STCL population reported a difficult adjustment to civilian life. Non-clients had a difficult adjustment less often (17%), while more VAC clients had difficult adjustment (DP clients 37%, NVC clients 57%), indicating that many who experienced re-establishment difficulties had already sought assistance from VAC.
2. CF Regular Force Veterans who released from service during 1998-2007 had worse health, disability and determinants of health status than the general Canadian population.
3. Many who had problems with health, disability, and determinants of health were already receiving benefits from VAC.
4. The majority who reported chronic health conditions diagnosed by a health professional attributed their conditions to military service, as did many with disability.
5. Those not receiving benefits from VAC were similar to Canadians in the general population in many respects, but on average had higher rates of some chronic health conditions and disability, and significant rates of attributing both to military service, suggesting VAC program reach issues and/or unmet needs.
6. Since persons seek assistance from VAC with health problems, then as would be expected VAC clients had worse health, disability and determinants of health status than the general population. NVC clients had the worst status.
7. VAC clients reported complex states of health. Among Veterans in VAC programs, the great majority (91-92%) had at least one physical health condition diagnosed by a health professional, and about half (40-60%) had at least one mental health condition. Two-thirds had 4-6 physical and mental health

conditions, and a fifth had even larger numbers of comorbid conditions. VAC clients had low levels of health-related quality of life, particularly for physical health.

8. The majority (89%) worked after release. The unemployment rate for Veterans (8%) was the same as that of the general population. NVC clients had a lower rate of working post-release and higher rates of unemployment than DP clients and non-clients. Rates of work satisfaction for all groups improved between the year after release and the year prior to the survey.
9. While most agreed that military experience, education and training helped in re-establishment, less than half reported that their prestige, skills and knowledge, authority, income, and importance was higher than that in their military service. Fewer NVC clients reported that their military knowledge, skills and abilities were transferable to their civilian work than DP clients and non-clients.
10. Rates of low income among Veterans were half that of the Canadian general population. Low income rates were similar for non-clients and VAC clients. Most (73%) were very satisfied or satisfied with their current financial situation. NVC clients were least satisfied (57%).
11. NVC and DP clients had higher rates of perceived stress compared to non-clients. NVC clients were least satisfied with their current job or main activity, and had the lowest rates of perceived community belonging and mastery.
12. A quarter (27%) of non-clients had low social support, and rates for VAC clients were much higher (DP clients 43%, NVC clients 52%).
13. The great majority of Veterans had health insurance for medications, dental care and eye glasses, and had a regular medical doctor at rates higher than the general Canadian population: 82% of the STCL population, and 89% of those who were VAC clients.

Summary

This report describes the health, disability and determinants of health of CF Regular Force Veterans after transition when they released from service in 1998-2007. The Survey on Transition to Civilian Life was the first comprehensive health survey of both those receiving benefits from VAC and those who were not.

Two-thirds (62%) of all CF Regular Force Veterans who released from service in 1998-2007 and 71% of those who were not receiving benefits from VAC had an easy adjustment to civilian life. As would be expected, significantly fewer VAC clients (DP clients 50% and NVC clients 28%) had easy adjustment, indicating that many who experienced re-establishment difficulties were already receiving benefits from VAC.

The findings suggest unmet needs and program reach issues. Non-clients were a very heterogeneous group that included 17% with a difficult adjustment to civilian life, and some with chronic physical and mental health conditions they attributed to military service. This suggests that some non-clients have unmet needs.

The findings suggest that VAC programs and services should be capable of assisting those with complex states of health. This complexity is demonstrated by the number, variety and comorbidity of physical, mental and social conditions reported by those receiving benefits from VAC.

STCL was a cross-sectional survey, so the findings provide a point-in-time snapshot of post-release health status of CF Regular Force personnel who released in 1998-2007. The survey yields little information about Veterans' life courses, and the findings cannot be used to prove a cause-and-effect relationship between military service and health after release from service, or outcomes of VAC programs.

Future LASS studies need to consider a longitudinal design to overcome the limitations of cross-sectional studies like STCL. VAC and DND/CF need ongoing information to support evidence-informed programs and policy that account for the life course dynamics of Veterans. STCL will inform future LASS studies by defining topics of further study, and identifying sub-populations of interest such as women in service and vulnerable groups who are not receiving benefits from VAC.

STCL findings provide a basis for informing VAC and DND/CF programs and services. Additional analyses will inform DND/CF health protection initiatives that mitigate health and disability problems among serving personnel after they leave service. Both departments will evaluate the results of the survey to meet the needs of Veterans throughout their life courses.

Enquête sur la transition à la vie civile: Rapport sur les vétérans de la Force régulière

Sommaire

Contexte

La transition de la vie militaire à la vie civile est un événement important, mais qui reste mal documenté, dans le parcours de vie des vétérans des forces armées. Dans le présent rapport, les vétérans en question sont des anciens membres des Forces canadiennes qui ont été libérés du service militaire, quel que soit le nombre de leurs années de service. Les vétérans qui éprouvent des difficultés à réintégrer la vie civile peuvent obtenir un soutien grâce aux programmes d'Anciens Combattants Canada (ACC). Les dernières données sur la santé de la population des vétérans des FC qui sont bénéficiaires d'avantages d'ACC commençaient à être dépassées et aucun sondage exhaustif n'avait encore été réalisé auprès des vétérans qui ne reçoivent pas d'avantages d'ACC. Des données plus complètes sont nécessaires pour permettre de répondre aux besoins modernes de réinsertion des vétérans, y compris l'évaluation des programmes de la Nouvelle Charte des anciens combattants lancés en 2006 et des autres programmes établis par ACC et le ministère de la Défense nationale et des Forces canadiennes (MND/FC).

Objectif

L'*Enquête sur la transition à la vie civile (ETVC)* avait pour but de mesurer l'état de santé, le degré d'invalidité et les déterminants de la santé des anciens membres de la Force régulière après leur libération du service militaire.

Conception

Statistique Canada a mené une enquête transversale à l'aide d'interviews téléphoniques assistés par ordinateur, au cours des mois de février et mars 2010. L'échantillon a été stratifié en trois groupes : les clients d'ACC bénéficiaires d'avantages des programmes de la Nouvelle Charte des anciens combattants (clients de la Nouvelle Charte); les clients d'ACC bénéficiaires de pensions d'invalidité mais d'aucun avantage de la Nouvelle Charte d'ACC (clients de PI); et les vétérans non bénéficiaires d'avantages d'ACC (non-clients).

Participants

Les répondants étaient des vétérans de la Force régulière des Forces canadiennes qui ont été libérés entre le 1^{er} janvier 1998 et le 31 décembre 2007. L'échantillonnage excluait les personnes qui étaient retournées dans les FC et qui étaient en service au moment de l'enquête, vivaient dans les territoires ou à l'extérieur du Canada, résidaient dans des établissements de soins de longue durée ou étaient décédées. Parmi les vétérans inclus dans l'échantillon, le taux de réponse était de 71 %, et 94 % ont accepté

que leurs réponses soient transmises à ACC et au MDN, ce qui donnait un échantillon représentatif à l'échelle nationale de 3 154 personnes. La population sondée était très hétérogène, composée d'un large éventail de caractéristiques sociodémographiques et de service :

- 8 % étaient des clients de la Nouvelle Charte, 26 % des clients de PI et 66 % des non-clients.
- Tous s'étaient joints aux FC dans les années 1960 et après.
- L'âge moyen était de 46 ans (variant de 20 à 67).
- 12 % étaient des femmes.
- 76 % étaient mariés ou conjoints de fait.
- 53 % avaient servi pendant une période de 20 ans ou plus.
- 65 % avaient été déployés.
- 65 % étaient des militaires de rang au moment de leur libération et 19 % étaient des recrues ou des cadets.
- 53 % avaient une éducation supérieure au niveau secondaire au moment de l'enquête et 7 % indiquaient une scolarité inférieure au niveau secondaire.
- 57 % avaient quitté volontairement les forces et 24 % avaient été libérés pour des raisons médicales.

Résultats

Le présent rapport donne un aperçu descriptif de plus de 40 indicateurs de santé, d'invalidité et de déterminants de santé recueillis lors de l'enquête. En voici les points saillants :

1. Les deux tiers (62 %) des vétérans de la Force régulière des FC qui ont été libérés du service militaire entre 1998 et 2007 ont déclaré que leur transition à la vie civile avait été facile, tandis qu'un quart (25 %) des répondants ont indiqué que leur transition à la vie civile avait été difficile. Chez les non-clients, on comptait moins d'adaptations difficiles (soit 17 %) alors que plus de clients d'ACC ont eu des difficultés d'adaptation (37 % des clients de PI et 57 % des clients de la Nouvelle Charte), indiquant qu'un grand nombre de personnes ayant éprouvé des difficultés de réinsertion avaient déjà sollicité de l'aide auprès d'ACC.
2. L'état de santé, le degré d'invalidité et les déterminants de santé des vétérans de la Force régulière des FC qui ont été libérés du service militaire entre 1998 et 2007 étaient pire que ceux de la population canadienne en général.
3. Beaucoup de ceux qui avaient des problèmes liés à la santé, à une invalidité et aux déterminants de la santé étaient déjà bénéficiaires d'avantages d'ACC.
4. La majorité de ceux qui ont indiqué avoir des problèmes de santé chroniques diagnostiqués par un professionnel de la santé attribuait leur état au service militaire, de même qu'un grand nombre de ceux souffrant d'une invalidité.
5. La situation de ceux qui n'étaient pas bénéficiaires d'avantages d'ACC était semblable, à bien des égards, à celles des Canadiens en général, mais en moyenne, ils avaient davantage de problèmes de santé chroniques et d'invalidités qu'ils attribuaient en grand nombre au service militaire, ce qui semble

indiquer des problèmes relatifs au degré de couverture des programmes ou des besoins non satisfaits.

6. Puisque les personnes demandent de l'aide auprès d'ACC en raison de problèmes de santé, comme on pouvait s'y attendre, les clients d'ACC avaient un état de santé inférieur, plus d'invalidités et d'accès aux déterminants de l'état de santé que la population en général. Ce sont les clients de la Nouvelle Charte qui avaient le pire état de santé.
7. Les clients d'ACC ont indiqué des problèmes de santé complexes. Parmi les vétérans participant aux programmes d'ACC, une grande majorité (91 – 92 %) avait au moins un problème de santé physique diagnostiqué par un professionnel de la santé et environ la moitié (40 - 60 %) étaient aux prises avec au moins un problème de santé mentale. Les deux tiers souffraient de quatre (4) à six (6) problèmes de santé physique et mentale et un cinquième d'entre eux avait un nombre encore plus élevé de troubles comorbides. Les clients d'ACC avaient un faible niveau de qualité de vie liée à la santé, particulièrement en ce qui touche la santé physique.
8. La majorité des répondants (89 %) travaillaient après leur libération. Le taux de chômage chez les vétérans (8 %) était le même que celui de la population en général. Les clients de la Nouvelle Charte avaient un plus bas taux d'emploi après leur libération et des taux de chômage plus élevés que les clients de PI et les non-clients. Les taux de satisfaction au travail pour tous les groupes se sont améliorés entre l'année suivant la libération et l'année précédant l'enquête.
9. Alors que la plupart reconnaissaient que l'expérience, l'éducation et la formation militaires avaient contribué favorablement à leur réinsertion, moins de la moitié ont indiqué que leur prestige, leurs compétences et connaissances, leur autorité, leur revenu et leur importance étaient plus grands que ceux dont ils jouissaient pendant leur service militaire. Moins de clients de la Nouvelle Charte ont indiqué que leurs connaissances, compétences et capacités militaires étaient transférables à leur emploi civil que ne l'ont fait les clients de PI et les non-clients.
10. Les taux de faible revenu parmi les vétérans correspondaient à la moitié de ceux de la population canadienne en général. Les taux de faible revenu des non-clients et des clients d'ACC étaient similaires. La plupart (73 %) étaient très satisfaits ou satisfaits de leur situation financière actuelle. Ce sont les clients de la Nouvelle Charte qui étaient les moins satisfaits (57 %).
11. Les clients de la Nouvelle Charte et de PI étaient aux prises avec des taux de stress perçus supérieurs à ceux des non-clients. Les clients de la Nouvelle Charte étaient les moins satisfaits de leur emploi courant ou de leur activité principale et avaient le plus bas degré de sentiment d'appartenance à la communauté et de maîtrise de la situation.
12. Le quart (27 %) des non-clients avaient un soutien social faible et les taux à cet égard pour les clients d'ACC étaient beaucoup plus élevés (43 % pour les clients de PI et 52 % pour les clients de la Nouvelle Charte).
13. La grande majorité des vétérans possédaient une assurance couvrant les médicaments, les soins dentaires et le coût des lunettes, et avaient un médecin régulier dans une proportion plus élevée que la population canadienne en

général : 82 % de la population de l'ETVC et 89 % de ceux qui étaient des clients d'ACC.

Résumé

Le présent rapport porte sur l'état de santé, les invalidités et les déterminants de la santé des vétérans de la Force régulière des FC après leur transition à la vie civile suivant leur libération du service militaire entre 1998 et 2007. L'Enquête sur la transition à la vie civile était la première enquête exhaustive sur la santé de ceux qui étaient bénéficiaires d'avantages d'ACC aussi bien que de ceux qui ne l'étaient pas.

Les deux tiers (62 %) de tous les vétérans de la Force régulière des FC qui ont été libérés du service militaire entre 1998 et 2007 et 71 % de ceux qui n'étaient pas bénéficiaires d'avantages d'ACC se sont adaptés facilement à la vie civile. Comme on pouvait s'y attendre, les clients d'ACC qui se sont adaptés avec facilité sont moins nombreux (50 % des clients de PI et 28 % des clients de la Nouvelle Charte), indiquant qu'un grand nombre de ceux qui ont éprouvé des problèmes de réinsertion à la vie civile étaient déjà bénéficiaires d'avantages d'ACC.

Les résultats tendent à indiquer qu'il existe des besoins non satisfaits et des problèmes liés au degré de couverture des programmes. Les non-clients constituaient un groupe très hétérogène dont 17 % ont éprouvé des difficultés d'adaptation à la vie civile et parmi lesquels certains souffraient de problèmes chroniques de santé physique et mentale qu'ils attribuaient au service militaire. Cela permet de penser que certains non-clients ont des besoins non comblés.

Selon les résultats, les programmes et les services d'ACC devraient permettre de venir en aide à ceux qui présentent des problèmes de santé complexes. La complexité est démontrée par la quantité, la diversité et le degré de comorbidité des problèmes physiques, mentaux et sociaux indiqués par ceux qui reçoivent des avantages d'ACC.

L'ETVC était un sondage transversal et, par conséquent, les résultats fournissent un aperçu ponctuel de l'état de santé post-libération des membres de la Force régulière des FC qui ont été libérés entre 1998 et 2007. L'enquête ne produit que peu d'information au sujet des parcours de vie des vétérans et les résultats ne peuvent pas servir à prouver la relation de cause à effet entre le service militaire et la santé après la libération du service ou encore les résultats des programmes d'ACC.

Pour les futures études sur la vie après le service militaire, il faudrait envisager une recherche longitudinale afin de surmonter les limites des études transversales comme l'ETVC. ACC et le MDF/des FC ont besoin de disposer d'information de façon continue pour appuyer des programmes et des politiques fondés sur des données qui tiennent compte de la dynamique du parcours de vie des vétérans. L'ETVC va inspirer les futures études sur la vie après le service militaire en définissant les thèmes des études futures et en cernant des sous-populations pertinentes comme les femmes dans le service militaire et les groupes vulnérables qui ne reçoivent pas d'avantages d'ACC.

Les résultats de l'ETVC servent de fondement pour l'orientation des programmes et des services d'ACC et du MDN/des FC. Des analyses supplémentaires vont informer les initiatives de protection de la santé du MDN/des FC qui visent à atténuer les problèmes de santé et d'invalidité des militaires après leur libération du service. Les deux ministères évalueront les résultats de l'enquête dans le but de répondre aux besoins des vétérans tout au long de leur parcours de vie.

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Survey on Transition to Civilian Life: Report on Regular Force Veterans

1. Introduction

Re-establishment in civilian life after military service goes well for many, but challenges others in ways that can persist over the life course (Pranger et al 2009, Elder et al. 1994, Iversen 2005, Settersten 2006, Wright 2009, Ikin et al 2009, Ardel and Landes 2010). Military to civilian transition is an extremely meaningful but poorly researched event in the life courses of military Veterans (MacLean et al 2010a, Sweet and Thompson 2009). While there is no standard framework for defining and measuring successful re-establishment, we propose that physical, mental and social health, disability, access to determinants of health, and life course perspective are core concepts (MacLean et al 2010a).

There are about 67,000¹ Regular Force personnel serving in the Canadian Forces, and during 1998-2007 about 4,300 Regular Force personnel released annually². About 593,800 Veterans alive today served in other than WWII and the Korean War, and 91% of those are not VAC clients³. Prior to World War II, Burke (1939) noted that little was known about the population health of Canadian Veterans who were not receiving Veterans' benefits. This gap remains today. Veteran identifier questions were first asked in the 1971 census, and have been used to provide population estimates for Veterans living among the Canadian population. Questions identifying women Veterans were added to the Canadian Labour Force Survey in 1988. Canadian Community Health Survey (CCHS) 2.1 in 2003 included Veteran identifier questions, providing limited information on the population health of Veterans living in the general population, but relied on self-reporting to identify military service (Thompson et al 2008).

VAC's 1997 Review of Veterans Care Needs survey (RVCN) and 1999 VAC Canadian Forces client survey yielded ground-breaking information on VAC clients (Statistics Canada 1998, Asmundson 2000, Marshall and Mateo 2004, Marshall et al 2000, Marshall et al 2005a, 2005b, 2005c) supported transformation of VAC programs, including a national network of Operational Stress Injury clinics and the 2006 New Veterans Charter. These surveys had limitations: with the passage of time, information from 1997-99 has become dated and lost some current utility; the limited scope of the survey questions provided only a partial picture of health and needs; and only Veterans receiving benefits from VAC were surveyed. At that time, World War II and Korean War Veterans still dominated the VAC client population, continuing to overshadow the growing number of later CF Veterans who served in operations around the world. Since

¹ Source: National Defence, 2009-10 Report on Plans and Priorities. <http://www.tbs-sct.gc.ca/rpp/2009-2010/inst/dnd/dnd01-eng.asp> viewed 25 October 2010.

² DND release data used to plan LASS.

³ VAC Statistics Directorate, June 2010.

the late 1980s, CF operational tempo has accelerated around the world, particularly in Afghanistan.

This report is an initial analysis of data from the Survey on Transition to Civilian Life (STCL), describing the health, disability and determinants of health status of Regular Force personnel after release from service during 1997 – 2008. The 2010 Survey on Transition to Civilian Life (STCL) is one component of the Life after Service Studies program of research (LASS) conducted by VAC, DND/CF and Statistics Canada (MacLean et al 2010). In addition to the survey, LASS also includes an Income Study, reported elsewhere (MacLean et al 2010b). LASS was created to evaluate the New Veterans Charter programs which were introduced in 2006 to facilitate re-establishment in civilian life, and to fill gaps in understanding military to civilian transition in Canada and other countries.

The Life After Service Studies (LASS) program of research focuses on four research questions:

1. *Re-establishment*: How are Canadian Forces personnel doing after transition to civilian life in terms of health (including well-being), disability, income and other determinants of health?
2. *Program Reach*: Are existing transition/re-establishment programs reaching those in need?
3. *Unmet Needs*: Are there unmet needs that call for new or revised programs?
4. *Program Effectiveness*: How do VAC clients and non-clients compare in terms of health (including well-being), disability, income and other determinants of health?

2. Methods

2.1 Study Population, Survey Design and Sample

The study population included Regular Force Veterans who released from January 1, 1998 to December 31, 2007 (**42,591**). The population frame excluded those living in institutions, the Territories, or outside Canada; those who were still serving at the time of the survey, those who died prior to the survey and those could not be traced because contact information could not be found (Statistics Canada 2010a). After exclusions for out-of-scope individuals, the revised population was **32,015** Veterans (Figure 1).

DND administrative data was used to develop the population frame, for contact information and for additional information on military service. This database's primary function was to manage human resources information on serving personnel, rather than research studies like STCL. The basic DND administrative dataset was an extract from the DND Human Resources Management System that included date of birth, sex, marital status name, number and age of dependents, education, rank, branch (Army, Navy, Air Force) and occupation at release, release reason (medical, voluntary, retirement etc), enrollment date, and release date.

VAC administrative data was used for contact information and to determine client status. Tax data for 2008 and PWGSC data on Veterans in receipt of Superannuation were used to supplement contact information, mainly for non-clients.

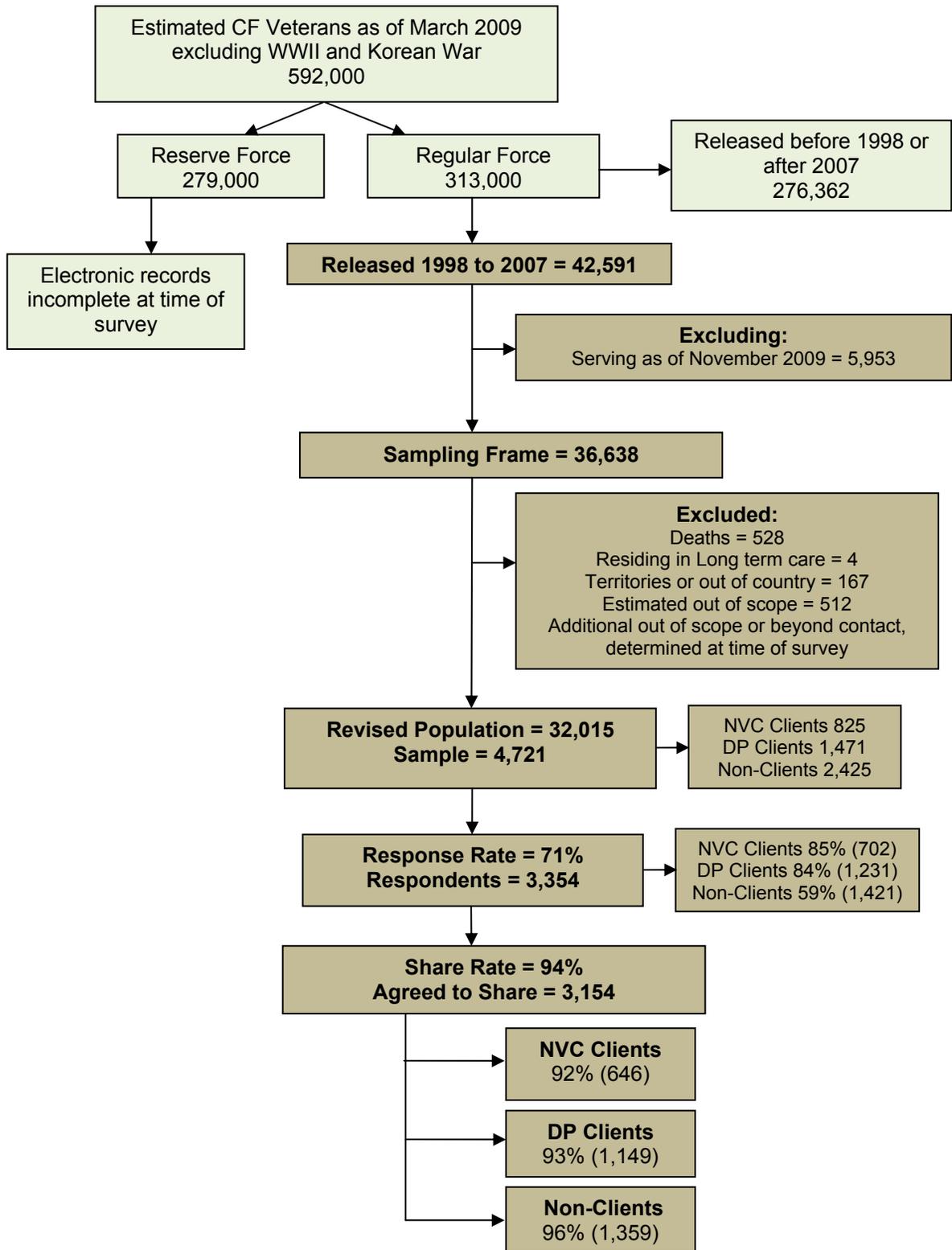
The questionnaire content was based mainly on Canadian Community Health Survey (CCHS) 2007-08 content (Statistics Canada 2008). However, additional content was developed specifically for the military and transition context. The development of the content is explained in MacLean et al (2010a). The survey was approximately 30 minutes long and was conducted by Statistics Canada from February 3, 2010 to March 19th, 2010 using computer-assisted telephone interviewing (CATI).

A random sample of **4,721** was stratified by three client status groups, with oversampling of VAC clients (Figure 1):

- NVC clients (VAC clients in receipt of programs, benefits and services under the New Veterans Charter (*Canadian Forces Members and Veterans Re-establishment and Compensation Act*) including Disability Awards, Rehabilitation, Earnings Loss, Career Transition Services, Canadian Forces Income Support and Health Insurance); some were also receiving disability pensions under the *Pension Act* and therefore eligible for certain benefits and services;
- DP clients (VAC clients in receipt of Disability Pension under the *Pension Act*, but not NVC programs); and
- Non-clients (Veterans not receiving benefits from VAC).

The STCL survey *master file* includes records for all respondents (3,354) and is maintained at Statistics Canada. From the master file, Statistics Canada compiled a *share data set* which contains responses for those who agreed to share their responses (3,154) with VAC and DND for linkage to administrative data using service number. The share data file and personal identifiers is kept confidential and used only to link databases for anonymous aggregate population research.

Figure 1: Study Population and Sample



2.2 Statistical Analysis

To adjust for the stratified random sampling design that allowed for oversampling VAC client groups, individual respondent sampling weights recommended by Statistics Canada were used to compute weighted population estimates (Statistics Canada 2010a, 2010b). Except as noted, all estimates of rates (indicators) in the report were calculated by using weighted population estimates that excluded non-response categories (“don’t know”, “not stated” and “refusal”).

All confidence intervals (CI) for STCL estimates were calculated at the 95% level using Stata, which takes into account sampling survey weights and stratification, and has been shown to produce results very similar to bootstrapping. Rates based on sample sizes less than 30 respondents were not used owing to statistical unreliability. Differences between rates noted in the report indicate that CIs did not overlap. STCL group rates were not standardized to each other, so readers are cautioned that differences in age, sex and other potential confounders need to be considered when comparing rates between the STCL groups.

For this report, estimates for the Canadian population from other surveys were adjusted for age and sex using direct standardization to STCL population estimates, based on STCL age and sex categories. The majority of comparator estimates originated from the 2007-08 Canadian Community Health Survey public use microdata file. Comparators were also obtained from the 2008 Survey of Labour and Income Dynamics, the Labour Force Survey from August 2010 and the 2006 Census.

Confidence intervals were not available for the standardized (adjusted) Canadian population comparators, so CIs for unadjusted indicators were used when they were available in CANSIM. When they were not available from a publication or online source, it was assumed that the unadjusted CIs would be the same as those published for adjusted estimates. Since the CCHS has very large sample sizes, the CIs for CCHS indicators are very small, usually less than $\pm 1\%$. CIs and sources are indicated in the tables where they were used.

2.3 Theoretical Framework

The theoretical framework for STCL is based on core concepts of population health: biopsychosocial health, disability, determinants of health, and life course (MacLean et al 2010a):

“Health” is a state of physical, mental and social well-being, with and without disorders (adapted from World Health Organization 1948). Impairment is the lessening of physical, mental or social function inherent in health disorders.

“Disability”: Disability is the lessening of ability that occurs as result of barriers encountered by persons with health impairments, both coping or adapting

internally, and when encountering external social and physical environmental barriers.

“Determinants of health” are the range of personal, social, economic and environmental factors that determine the health status of individuals or populations (WHO 1998), areas where interventions can modify the health of a population. The Public Health Agency of Canada (PHAC) provided this list of determinants of health (PHAC 2009):

1. Income, social status
2. Social support networks
3. Education, literacy
4. Employment/working conditions
5. Physical environments
6. Personal health practices
7. Healthy childhood development
8. Individual capacity and coping skills
9. Biology; genetic endowment
10. Health services
11. Gender
12. Culture

“Life course” is a perspective viewing a person’s current health and disability status as fluctuating along a trajectory dependent on prior health, disability and determinants of health.

2.4 Indicators of Health, Disability and Determinants of Health

This report includes more than 40 indicators of health, disability and determinants of health (See Appendix 1 for definitions). The majority were drawn from a standard larger set of population health indicators developed allowing for comparisons with the general Canadian population (Statistics Canada 2008). Comparators from general population surveys were available for about half the indicators.

STCL included Version 1.0 of QualityMetric’s SF-12 Health Survey (Short-Form 12-Item Health Survey) as a measure of self-reported health-related quality of life (HRQoL). The physical (PCS) and mental (MCS) summary score means and confidence intervals were computed by Statistics Canada using QualityMetric’s computer scoring software (Saris-Baglana et al 2007). This software computes summary scores based on normative data for the 1998 U.S. non-institutionalized general population. In calculating mean SF-12 summary scores, respondent sampling weightings provided by Statistics Canada were applied to individual’s scores to compensate for oversampling required by the stratified sampling design of the survey. Mean scores were not adjusted for differences in age, sex and other confounders, so readers are cautioned about comparing the SF-12 mean scores between STCL groups and with comparators.

3. Results

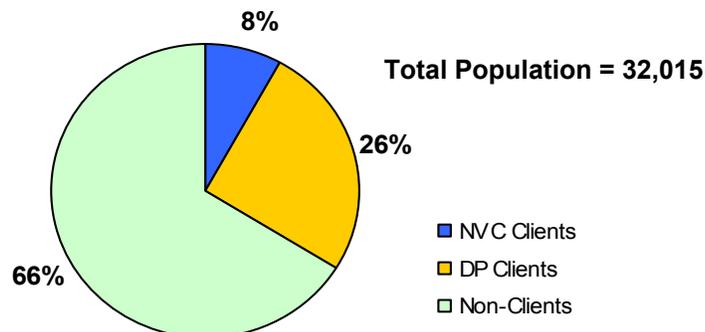
3.1 Response and Share Rates

The response rate was 71%, lowest for non-clients (59%), higher for VAC DP clients (84%) and highest for VAC NVC clients (85%). Of those who responded, 94% agreed to share their responses with VAC/DND and to allow VAC/DND to link to administrative data. The non-client response rate was lower owing to lack of current contact information. Non-clients had the highest share rate (96%), while the share rates for clients were slightly lower at 93% for DP clients and 92% for NVC clients (Figure 1). Data was anonymously analyzed for those who agreed to share their findings.

3.2 Population Characteristics

The total estimated population was 32,015. Non-clients comprised 66% (21,247) of the population, 26% (8,269) were DP clients, and 8% (2,499) were NVC clients (Figure 2). Half (52%) of NVC clients were in the Rehabilitation Program as of 31 March 2009 when client status was determined for the sample.

Figure 2: STCL subgroup sizes.



CF Veterans who released during 1998-2007 were predominantly male (88%) with an average age of 46 years, range 20–67 (Table 1 and Figure 3). The majority were married or living common-law (77%).

More than half (53%) had served 20 years or more. About two-thirds (65%) had deployed. Most (65%) released as non-commissioned members (NCM), 19% released as recruits or officer/naval cadets, and 20% as officers. Almost half (49%) released from the Army, 31% released from the Air Force and 16% released from the Navy (branch unknown for 4%). Most released voluntarily (57%), 24% were released for medical reasons, 7% were released due to having reached retirement age, 7% had completed their service contract and 5% were released involuntarily.

Table 1: Characteristics of respondents (n = 3,154).

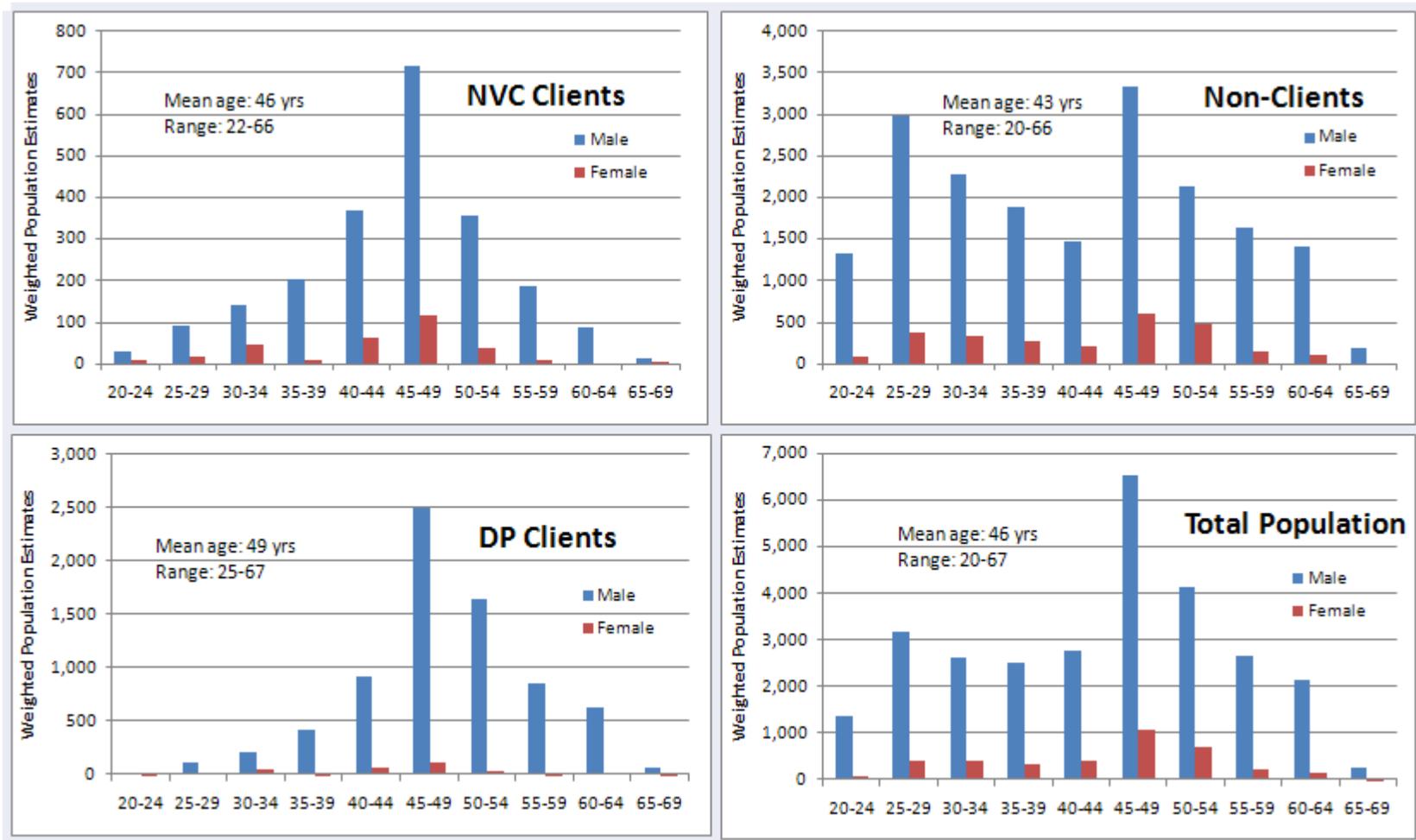
Variable	Category	NVC Clients		DP Clients		Non-clients		Total	
		Sample	% ^A	Sample	%	Sample	%	Sample	%
Age at survey	20-24	9	1.5	0	0.0	74	6.6	83	4.5
	25-29	25	4.3	16	1.6	180	15.8	221	11.3
	30-34	45	7.6	30	3.0	140	12.3	215	9.5
	35-39	49	8.4	57	5.7	116	10.2	222	8.9
	40-44	110	17.2	143	12.7	117	7.9	370	9.9
	45-49	214	33.4	393	34.7	275	18.5	882	23.9
	50-54	110	15.7	267	22.3	193	12.2	570	15.1
	55-59	55	7.8	136	11.3	135	8.4	326	9.1
	60-64	25	3.5	97	8.0	115	7.1	237	7.1
65-69	4	0.6	10	0.8	14	0.9	28	0.8	
Sex	Male	567	87.9	1,024	89.1	1,189	87.8	2,780	88.2
	Female	79	12.1	125	10.9	170	12.2	374	11.8
Marital Status, by status at survey	Married	385	58.9	787	68.0	818	56.8	1,990	59.9
	Common-law	103	16.3	150	13.4	207	16.5	460	15.7
	Widowed	4	0.6	8	0.7	7	0.5	19	0.6
	Separated	32	5.0	51	4.5	38	2.8	121	3.4
	Divorced	57	8.9	87	7.6	56	3.8	200	5.2
	Single/never married	64	10.4	66	5.9	233	19.5	363	15.3
Length of Service	< 10 years	120	20.0	92	8.8	516	44.6	728	33.4
	10-19 years	136	21.7	212	19.1	138	10.1	486	13.3
	≥ 20 years	390	58.3	845	72.1	705	45.3	1,940	53.3
Enrolment Period	1960s	35	5.0	102	8.4	123	7.6	260	7.6
	1970s	154	22.3	399	33.6	330	20.9	883	24.3
	1980s	293	45.5	518	45.6	362	24.5	1,173	31.6
	1990s	92	15.4	96	9.2	194	16.6	382	14.6
	2000s	72	11.9	34	3.2	350	30.4	456	21.9
Release Year	1998	36	5.4	85	7.3	149	10.5	270	9.3
	1999	34	5.0	87	7.5	134	9.6	255	8.7
	2000	34	5.1	99	8.5	138	9.8	271	9.1
	2001	31	4.7	90	7.9	122	8.4	243	8.0
	2002	33	5.1	108	9.3	130	9.5	271	9.1
	2003	41	6.3	133	11.6	116	8.6	290	9.2
	2004	60	9.3	176	15.3	101	7.6	337	9.7
	2005	53	8.4	155	13.6	128	9.6	336	10.6
	2006	151	23.5	136	11.9	161	12.1	448	13.0
	2007	173	27.1	80	7.0	180	14.1	433	13.3

Variable	Category	NVC Clients		DP Clients		Non-clients		Total	
		Sample	% ^A	Sample	%	Sample	%	Sample	%
Release Type ^B	Involuntary	26	4.3	12	1.1	70	6.0	108	4.6
	Medical	377	58.6	627	54.9	122	8.5	1,126	24.4
	Voluntary	185	28.6	339	29.6	942	70.9	1,466	57.0
	Retirement Age	24	3.4	84	7.0	120	7.4	228	7.0
	Service Complete	34	5.1	86	7.4	105	7.1	225	7.0
Deployment (in or out of Canada)	Deployed	528	82.9	975	86.2	777	54.7	2,280	65.0
Rank ^C	Senior Officers	32	4.7	78	6.5	143	9.0	253	8.0
	Junior Officers	28	4.3	55	4.8	131	9.5	214	7.9
	Cadets	2	0.3	6	0.5	78	6.6	86	4.5
	Senior NCM	210	31.4	473	40.2	362	23.2	1,045	28.2
	Junior NCM	318	50.1	505	44.7	306	22.1	1,129	30.1
	Privates	22	3.6	13	1.3	101	8.8	136	6.5
	Recruits	34	5.6	19	1.9	238	20.8	291	14.7
Branch	Air Force	184	28.0	355	30.4	465	31.8	1,004	31.1
	Army	368	57.8	626	55.0	576	45.3	1,570	48.8
	Navy	91	13.8	145	12.6	237	17.1	473	15.7
	Unknown	3	0.4	23	2.0	81	5.8	107	4.4
Education at time of survey	Less than high school graduation	47	7.1	102	8.8	84	5.9	233	6.8
	High school	308	47.8	512	44.3	527	38.4	1,347	40.7
	Trade	54	8.6	107	9.5	124	9.8	285	9.6
	College/CEG EP	163	25.5	261	23.0	282	21.5	706	22.2
	University below bachelor's	25	3.8	52	4.6	58	4.2	135	4.3
	Bachelor's	31	4.7	69	6.0	175	12.8	275	10.4
	University above bachelor's	17	2.6	45	3.9	107	7.4	169	6.1

Notes:

- A. Weighted results, expressed as per cent of variable total.
- B. *Involuntary* includes Misconduct Dismissal, Misconduct Service, Illegally Absent, Fraudulent Enrollment, Unsatisfactory Conduct, Unsatisfactory Performance, Not Advantageously Employed, Death and Transfer Out. Medical includes Medical Disabled Member and Medical Disabled MOC. *Voluntary* includes Voluntary Immediate Annuity, Voluntary Fixed Service and Voluntary Other Causes.
- C. *Senior Officer* (Major to General and Lieutenant-Commander to Admiral Navy), *Junior Officer* (Second Lieutenant to Captain, and Acting Sub-Lieutenant to Lieutenant Navy), *Cadet* (Officer or Naval Cadet) *Senior Non-Commissioned Member* (NCM) (Sergeant to Chief Warrant Officer, and Able Seaman to Petty Officer 1st Class Navy), *Junior NCM* (Master Corporal to Corporal, and Master Seaman to Leading Seaman Navy), *Private* (Private and Able Seaman), *Recruit* (Private-Recruit, Private-Training, Ordinary Seaman and Ordinary Seaman-Recruit).

Figure 3: Age and sex profiles.



At the time of the survey, only 7% had less than high school graduation, most had at least high school (41%), 36% had at least some post-secondary education other than bachelor's degree or higher, and 17% had completed a bachelor's degree or had university above a bachelor's degree.

The bimodal age distribution of non-clients (Figure 3) probably can be explained by the presence of two subgroups: generally younger personnel who released as recruits, cadets, and junior ranks, and generally older personnel who had longer careers in the Canadian Forces.

VAC clients were on average older than non-clients (NVC clients 46 years, DP clients 49 years and non-clients 43 years). Women comprised slightly fewer DP clients (11%) than the other two groups (12%). VAC clients were more likely (NVC 75%, DP 81%) to be married or living common-law than non-clients (73%).

VAC clients were more likely to have released as NCMs than non-clients, while the non-clients were more likely to have released as recruits, officer cadets or officers. VAC clients were also more likely to have released from the Army than non-clients and were less likely to have had post-secondary education.

VAC clients were much more likely to have been released for medical reasons (NVC 59%, DP 55%) than non-clients (9%). More VAC clients had deployed (NVC 83%, DP 86%) than non-clients (55%). Deployment could be a proxy measure for military service stress, but not necessarily combat exposure. There is good evidence in the literature that mental, physical and social health can be related to degree of combat exposure.

Era Effects

The STCL population enrolled in the CF over four decades from the 1960s (Figure 4), and released at varying rates throughout the 1998-2007 study decade (Figure 5). VAC clients generally enrolled earlier than non-clients, and DP clients generally enrolled earlier than NVC clients. The non-client group was bimodal: some who enrolled earlier, and a larger group who enrolled in the 2000s. This bimodality was also seen in the age histogram (Figure 3).

VAC clients were more likely to have served 20 years or more (58% of NVC clients, 72% of DP clients compared to 45% of non-clients). This is reflected in the enrollment period as clients were more likely than non-clients to have enrolled in the 1970s and 1980s (68% of NVC clients and 79% of DP clients compared to 45% of non-clients). Non-clients were more likely to have enrolled in the 2000s (30% compared to 12% of NVC clients and 3% of DP clients). Consistent with introduction of the NVC programs in 2006, NVC clients were more likely than non-clients to have released from 2005 onward, (Figure 5) and for that reason DP clients were more likely to have released prior to the 2006 introduction of the NVC. Clients can be eligible for NVC programs in respect of service prior to 2006, and NVC clients include some who were receiving both disability pensions and receiving benefits from VAC.

Figure 4: Decade of enrollment.

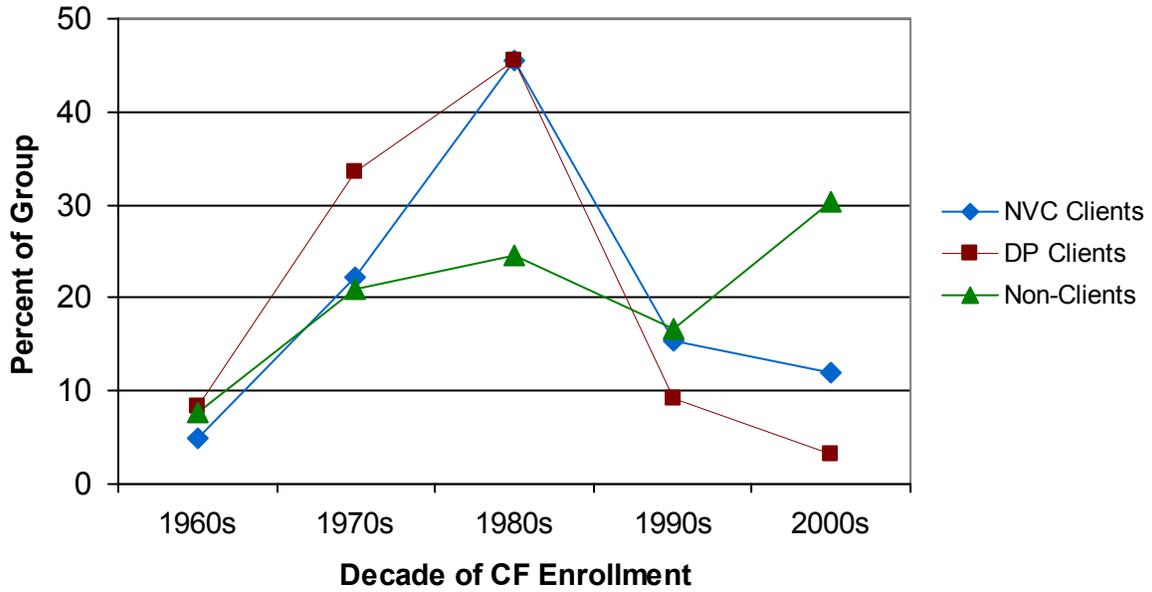
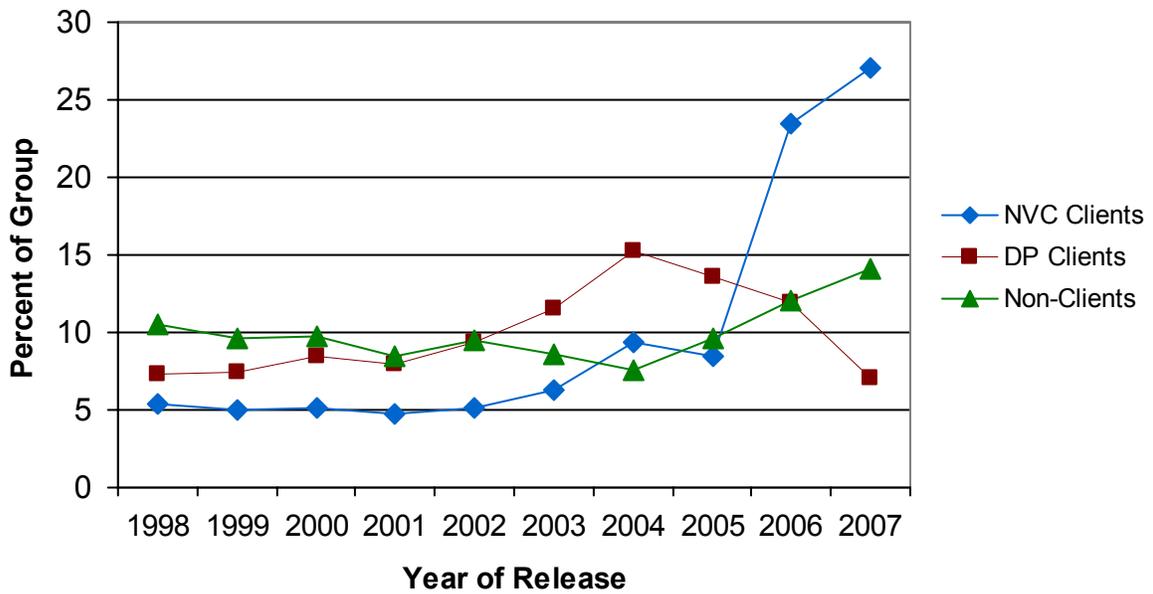


Figure 5: Year of Release.



3.3 Health

Health status was estimated using self-reported indicators of general health and chronic physical and mental health conditions, expressed as percentage rates using weighted population estimates.

3.3.1 General Health (Well Being)

STCL included several indicators of perceived health or well being, and four are discussed here; perceived health, perceived mental health; satisfaction with life (Table 2); and health-related quality of life (SF-12). Definitions for these indicators are shown in Appendix 1.

Table 2: Perceived health and satisfaction with life.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Perceived health (very good or excellent)	20.5% (17.6-23.8%)	29.9% (27.2-32.6%)	70.0% (67.4-72.3%)	55.8% (53.9-57.5%)
Comparator ^A	60.9% (60.2-61.6%)	58.6% (57.9-59.3%)	61.9% (61.2-62.6%)	61.0% (60.3-61.7%)
Perceived mental health (very good or excellent)	33.4% (29.8-37.1%)	49.8% (46.8-52.6%)	76.9% (74.5-79.1%)	66.5% (64.7-68.1%)
Comparator	75.0% (74.4-75.5%)	74.4% (73.8-74.9%)	75.6% (75.0-76.1%)	75.2% (74.6-75.7%)
Satisfaction with Life (satisfied or very satisfied)	62.9% (59.1-66.6%)	77.4% (74.6-79.5%)	90.4% (88.6-91.8%)	84.9% (83.4-86.0%)
Comparator	91.0% (90.5-91.4%)	90.8% (90.3-91.2%)	91.2% (90.7-91.6%)	91.1% (90.6-91.5%)

Note: A – Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

Perceived Health

Over half (56%) assessed their health as very good or excellent, slightly lower than adjusted rate for the Canadian population of 61%. NVC clients (21%) and DP clients (30%) both had much lower rates than non-clients (70%) (Table 2).

Perceived Mental Health

Most (67%) assessed their mental health as very good or excellent, lower than adjusted rate for the Canadian population of 75%. NVC clients (33%) and DP clients (50%) both had lower rates than non-clients at 77%.

Satisfaction with Life

The majority (85%) reported very good or excellent satisfaction with life, lower than adjusted rate for the Canadian population (91%). NVC clients (63%) and DP clients (77%) both had lower rates than non-clients at 90%.

SF-12: Health-Related Quality of Life

The SF-12 measures health-related quality of life, and has proven a useful adjunct in understanding the health of populations. For the STCL population, mean PCS (physical health component) scores were below the norm (1998 U.S. non-institutionalized general population) to 47 for males and 45 for females (Table 3). Mean MCS (mental health component) scores were 52 for males and 50 for females, above the U.S. population norms. Scores for non-clients were very good, generally comparable to U.S. population norms for those who did not report having chronic health conditions (Table 4). Scores for both VAC client groups were well below the U.S. norms, particularly physical health scores.

Table 3: SF-12 mean summary measures.

Mean Scores	SF-12 Means ^A and 95% Confidence Intervals			
	NVC Clients	DP Clients	Non-Clients	Total STCL Population
PCS ^B – Male	35.7 (34.7-36.8)	38.8 (38.1-39.5)	52.1 (51.6-52.5)	47.3 (47.0-47.7)
PCS – Female	34.0 (31.6-36.4)	34.7 (32.2-37.2)	49.1 (47.4-50.8)	44.5 (43.0-46.0)
PCS – Both	35.5 (34.6-36.5)	38.4 (37.6-39.1)	51.7 (51.3-52.2)	47.0 (46.6-47.4)
MCS ^C – Male	44.2 (43.0-45.3)	49.3 (48.6-50.1)	53.6 (53.1-54.2)	51.8 (51.3-52.2)
MCS – Female	40.4 (37.2-43.7)	47.3 (44.5-50.1)	52.2 (50.9-53.6)	50.1 (48.9-51.3)
MCS – Both	43.7 (42.6-44.8)	49.1 (48.4-49.9)	53.5 (53.0-54.0)	51.6 (51.2-52.0)

Notes:

- A. Means use sampling weights provided by Statistics Canada.
- B. Physical component score.
- C. Mental component score.

Table 4: SF-12 means, non-institutionalized 1998 U.S. general population.

Mean Scores ^A	Whole Population	Without Chronic Conditions	Back Pain or Sciatica ^D	Cancer Except Skin ^D	Heart Disease ^D	Diabetes ^D	Depression ^D
PCS ^B – Male	49.6	--	--	--	--	--	--
PCS – Female	48.7	--	--	--	--	--	--
PCS – Both	49.6	54.3	46.0	40.8	38.8	41.5	45.6
MCS ^C – Male	49.4	--	--	--	--	--	--
MCS – Female	48.4	--	--	--	--	--	--
MCS – Both	49.4	52.3	47.4	47.1	48.3	47.3	37.4

Notes:

- A. Ware et al (2002); not age- and sex-adjusted to STCL scores, and not adjusted for sociodemographic or comorbidity confounders.
- B. Physical component score.
- C. Mental component score.
- D. Not exclusive of other (comorbid) disorders.

Interpretation

Low VAC client SF-12 summary scores indicate both low health-related quality of life and the complexity of health care needs, particularly for those receiving benefits from VAC. It was not unexpected that the SF-12 physical and mental component summary scores would be lower for VAC clients than for Veterans not receiving benefits from VAC, because Veterans seek assistance from VAC for health-related difficulties.

One way of appreciating the degree to which the STCL SF-12 scores varied from norms is to assume that the normal population had mean score 50 and standard deviation \pm 10. If assumptions hold, then the PCS score of 47 for the total STCL population means that 62% of the general population had higher scores. The PCS score of 36 for NVC clients means that 92% of the general population had higher PCS scores⁴. The MCS score of 44 for NVC clients means that 74% of the general population had higher MCS scores.

Another way of appreciating the SF-12 scores is to compare them with U.S. general population norms for persons with health conditions (Table 4). For example, the physical component score for NVC clients (36) was similar to the score for persons with chronic heart disease (39), and far below the score for those with no chronic health conditions (54). On the other hand, the mental component score for NVC clients (44) was well below the U.S. norm for those with heart disease (48), but above the norm for those with depression (37).

⁴Percent of population with a higher SF-12 score was estimated by converting the observed SF-12 score to the Z statistic representing the number of standard deviations of the STCL SF-12 score below the comparator mean of 50, and finding the area under the normal distribution curve greater than that Z.

While SF-12 norms are not available for the Canadian general population, there is some evidence that SF-12 scores derived using U.S. general population standards are comparable to SF-12 scores within a few points difference for populations in other countries, including nine European countries (Ware et al 2002). Hawthorne et al (2007) found significant differences between Australian and U.S. norms for the SF-36. Canada's population probably is even more comparable to the U.S. general population than European countries, but could be more like the Australian, so on balance while larger differences are likely to be meaningful, readers are advised to use caution in interpreting small differences.

Comparisons with Other Studies

Other military and Veteran health surveys used the SF-36. There is evidence that SF-12 and SF-36 scores are comparable (Ware et al 2002, Wilson et al 2002, Sanderson and Andrews 2002). Hopman et al (2000) published Canadian SF-36 norms for adults living in 9 cities, reporting mean PCS of 50.5 and MCS of 51.7 that were only 1-2 points different from means for the U.S. general population. Hopman et al (2009) later derived SF-36 norms for Canadian adolescents and young adults.

In Canada, in a post-deployment study of troops 4-6 months after return from Afghanistan in 2002, the SF-36 mean PCS (47) and MCS (48), were 5 and 4 points below adjusted norms for the Canadian population, in the range of unique effects of serious illnesses such as diabetes, recent heart attack and arthritis (Zamorski and Galvin 2006). The life course significance of this finding is unclear, since it is not clear that these scores would not improve with time post deployment. Richardson et al (2010) used the SF-12 to assess health-related quality of life in WWII and Korean War Veterans applying to VAC for psychiatric conditions more than 50 years after the wars, finding very low scores (PCS 38 and MCS 34).

In the U.S., a version of the SF-36 modified for Veterans by the U.S. Veterans Administration Health Administration was used extensively in surveys of Veterans receiving care in US VA facilities. Kazis et al (1998) reported very low PCS and MCS scores, similar to those found for the VAC client groups in STCL. Kazis et al (1999) found that SF-36V measures were strongly correlated with the sociodemographics and morbidities of Veterans using the VA. Singh et al (2005) found that in one VA regional network that HRQoL was significantly lower than the general U.S. population: PCS 35.6 and MCS 46.4. These scores are comparable to those found in STCL for the VAC client groups, except the MCS scores for the NVC group were even lower. Singh et al (2005) found that SF-36V PCS and MCS were significantly associated with subsequent mortality and use of inpatient and outpatient care among older Veterans receiving care in a US VA region. Boehmer et al (2003) analyzed SF-36 scores for U.S. Veterans living in the general population using data from the nationally representative 2000 Behavioural Risk Factor Surveillance System (BRFSS). After controlling for demographic and lifestyle factors such as sex, age, race, ethnicity, income level, educational background, marital status, employment status and body mass index, all of which had been

associated with changes in HRQoL in the literature, they found little or no difference in HRQoL for Veterans living in the general population and non-Veterans.

Sex Differences

Differences in SF-12 scores between men and women found in this survey (Table 3) were similar to those found in normative data and other studies (Ware et al 2002). The sex-specific significance of these differences is unclear.

Limitations and Further Study

This preliminary assessment of the SF-12 findings is limited by lack of adjustment for potential confounders such as age, sex and other sociodemographic variables, which can be significant when comparing the findings to other studies. The mean scores in Table 3 were not adjusted for age, sex and other confounders, so readers are cautioned about making comparisons between STCL groups and with comparators.

The two VAC client subgroups had fairly similar age profiles, but the non-client subgroup had a larger proportion of younger Veterans (Figure 3). Compared to the general population, there were few women in the STCL population (12%). In the comparator U.S. general population, mixed-sex PCS mean scores decreased with 10-year adult age from 53 to 44, and mean MCS scores increased from 46 to 52 (Ware et al 2002). In the 1988 non-institutionalized U.S. general population, women had mean PCS scores 1-2 points lower than men, and MCS scores 1-4 lower. It is therefore possible that small differences between STCL population SF-12 scores and scores for the comparator U.S. general population (Table 3) could change if the data are analyzed to account for this potential confounding.

Jayasinghe et al (2009) studied a large number of chronically ill patients in 96 Australian general practices, finding significant associations between lower SF-12 PCS and MCS scores and poorer health, socio-economic patient characteristics, and characteristics of practices. Further analysis of the STCL SF-12 scores using methods such as regression analysis to better control for confounding and learn more from the data will aid in better understanding the health status and needs of CF Veterans after transition to civilian life.

The SF-12 can be a potent tool for evaluating self-reported health-related quality of life in conjunction with other population health measures. For example, further analysis of the STCL SF-12 data could help to identify subgroups of non-clients who might have health needs comparable to those already receiving benefits from VAC.

3.3.2 Chronic Physical Health Conditions

Respondents were asked about a limited number of chronic physical health conditions that had lasted or were expected to last six months or more, and had been diagnosed by a health professional (Table 5). Rates of pain and interference with work are shown in Table 6. The conditions were chosen to represent common conditions among Veterans such as hearing problems, musculoskeletal disorders and chronic pain; and those that

are less common but can be associated with significant impairment and premature mortality such as cancer, cardiovascular disease and chronic obstructive pulmonary disease. Definitions for these indicators are shown in Appendix 1.

Table 5: Chronic physical health conditions.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Hearing problems (difficulty hearing or use assistive device)	51.2% (47.1-54.8%)	47.3% (44.5-50.2%)	17.5% (15.5-19.5%)	27.8% (26.2-29.3%)
Arthritis	45.3% (41.4-49.2%)	44.7% (41.8-47.6%)	12.6% (11.0-14.4%)	23.4% (22.0-24.9%)
Comparator ^A	11.3% (10.9-11.7%)	13.8% (13.4-14.2%)	10.1% (9.7-10.5%)	11.1% (10.7-11.5%)
Back problems	67.3% (63.3-70.5%)	63.1% (60.2-65.8%)	27.9% (25.5-30.3%)	40.1% (38.3-41.8%)
Comparator ^B	22.3% (21.6-23.0%)	23.5% (22.8-24.2%)	20.4% (19.7-21.1%)	21.3% (20.6-22.0%)
Asthma	8.1% (6.2-10.4%)	7.2% (5.8-8.8%)	5.0% (3.9-6.3%)	5.8% (5.0-6.7%)
Comparator ^A	6.4% (6.0-6.7%)	6.2% (5.8-6.5%)	6.7% (6.3-7.0%)	6.5% (6.1-6.8%)
COPD	6.0% (4.3-8.2%)	4.9% (3.8-6.4%)	x	3.2% (2.6-4.0%)
Comparator ^A	3.2% (2.9-3.6%)	3.7% (3.4-4.1%)	--	3.5% (3.2-3.9%)
Heart disease	5.4% (3.9-7.4%)	6.0% (4.8-7.5%)	3.2% (2.4-4.2%)	4.1% (3.5-4.9%)
Comparator ^B	3.0% (2.3-3.7%)	4.0% (3.3-4.7%)	3.0% (2.3-3.7%)	3.2% (2.5-3.9%)
Stroke effects	x	x	x	0.7% (0.51-1.07%)
Comparator ^B	--	--	--	0.6% (-0.1-1.3%)
High blood pressure	24.7% (21.5-28.1%)	26.0% (23.4-28.5%)	14.7% (12.9-16.6%)	18.4% (17.0-19.8%)
Comparator ^A	14.1% (13.7-14.5%)	17.4% (17.0-17.8%)	12.6% (12.2-13.0%)	14.0% (13.6-14.4%)
Diabetes	8.6% (6.7-11.0%)	7.9% (6.5-9.6%)	4.2% (3.3-5.4%)	5.5% (4.8-6.4%)
Comparator ^A	5.2% (4.9-5.5%)	6.6% (6.3-6.9%)	4.8% (4.5-5.1%)	5.3% (5.0-5.6%)
Cancer	x	x	x	1.2% (0.85-1.63%)
Comparator ^B	--	--	--	1.1% (0.4-1.8%)
Bowel disorders	13.5% (11.0-16.3%)	11.4% (9.63-13.3%)	4.3% (3.37-5.56%)	6.9% (6.02-7.8%)
Comparator ^B	3.3% (2.6-4.0%)	3.4% (2.7-4.1%)	3.3% (2.6-4.0%)	3.3% (2.6-4.0%)

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Overweight	44.3% (40.5-48.2%)	44.1% (41.2-47.0%)	42.4% (39.7-45.1%)	43.0% (41.0-44.9%)
Comparator ^A	40.3% (39.6-41.0%)	41.4% (40.7-42.1%)	42.3% (41.6-43.0%)	40.3% (39.6-41.0%)
Obesity	35.2% (31.6-39.0%)	36.4% (33.6-39.2%)	24.4% (22.1-26.7%)	28.3% (26.6-30.1%)
Comparator ^A	19.2% (18.8-19.7%)	20.0% (19.6-20.5%)	18.3% (17.9-18.8%)	18.8% (18.4-19.3%)

Notes:

A – Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

B – Rates are CCHS 2007-08 age-sex standardized to STCL. Published (CANSIM) CCHS confidence interval not available, so applied highest CCHS CI for STCL indicators (perceived health, overweight and sense of community belonging CI ± 0.7%).

“--” – no comparable nationally representative indicator available.

X – Unreliable data as sample size below 30.

Hearing Problems

More than a quarter (28%) reported hearing problems (being unable to hear without the use of a hearing aid or assistive device, or having difficulty hearing). Half of VAC clients reported hearing problems (NVC clients 51%; DP clients 47%), more than double the rate for non-clients (18%; Table 5).

No Canadian general population comparator was found for hearing problems. The rates that are available are not comparable because the questions differ. Nevertheless, it is clear that hearing difficulty was prevalent in the Veteran population, as it has been for prior generations of military Veterans (Tooley 1965, Abel 2005, Humes et al 2006). Millar (2005) found in CCHS 2003 data that 3% of the Canadian household population aged 12 and older reported some type of hearing difficulty, and 11% of those aged 65 or older. The CCHS 2003 questions were more specific, based on hearing conversations in a room.

Musculoskeletal: Arthritis and Back Problems

About a quarter (23%) reported arthritis, double the adjusted rate for the Canadian population (11%) (Table 5). The difference was largely due to the high rates reported among clients: almost half of NVC clients and DP clients (45%) had reported arthritis, more than triple the rate for non-clients (13%).

The rate of back problems (40%) was almost double the adjusted rate for the Canadian population (21%). Again, the difference was largely due to the high rates reported among clients, but the rate among non-clients was also higher than for the Canadian population. Over half of NVC clients (67%) and DP clients (63%) had arthritis, more than double the rate for non-clients (28%).

High rates of back problems among Veterans and serving members have been found in other studies. In the 1999 survey of VAC Canadian Forces (post Korean War) clients,

55% reported back problems (Asmundson 2000). The 2004 CF Health and Lifestyle Information Survey (HLIS) found that back problems were one of the most common conditions in serving members at 18%.

Higher rates of arthritis among Veterans and serving members have been found in other studies. In an analysis of CCHS 2.1 2003, Thompson et al (2008) found that self-identified Canadian World War II, Korean War, and post-Korean War CF Veterans (Regular and Reserve Force) living in the general population self-reported higher rates of arthritis and activity limitation. HLIS 2004 found that arthritis after back problems was one of the most common conditions in serving members at 7%. In a large study of U.S. Veterans using the 2000 Behavioral Risk Factor Surveillance System, Dominick et al (2006) also found that Veterans were more likely than the general population to report doctor-diagnosed arthritis (32% vs 22%; $p < 0.001$), and that Veterans who were Veterans Affairs healthcare users were more likely to report the condition than Veterans who were not (43% vs 30%; $p < 0.001$).

Pain or Discomfort

Among the total STCL population, 41% reported they had pain or discomfort always present, 56% reported they had periods of pain or discomfort that recurred from time to time and 42% reported that this pain or discomfort reduced their activity (Table 5). Among non-clients, pain or discomfort (24% always present; 45% recurring periodically) and related activity limitation (28%) were much less prevalent compared to the two VAC client groups, who reported pain or discomfort at much higher rates of 73-80% and related activity limitation at 71-72%.

Among the total STCL population, 12% reported pain significantly interfered with normal work including housework (Table 5). This rate was much lower for non-clients (3%), but higher for DP clients (27%) and NVC clients (40%). The proportion of VAC clients whose pain or discomfort reduced activity was greater than for non-clients (Table 6).

Chronic pain is common in the general population, but rates from other surveys are not directly comparable to STCL. Moulin (2002) found in a national Canadian survey that 29% of adults reported chronic non-cancer pain (continuous or intermittent for at least six months). Canadian Institutes of Health Information reported that according to the 1998-9 National Population Health Survey, the most common drugs taken by Canadians were painkillers, taken by 65% of Canadians in the month prior to the survey (CIHI 2002). In CCHS 2007-08, about 1 in 8 reported they were not usually free of pain, and about 1 in 10 reported that pain or discomfort prevented a few, some or most activities.

Table 6: Rates of pain or discomfort, and interference with work.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Pain or discomfort (always present)	80.3% (76.8-82.9%)	72.7% (70.0-75.2%)	23.9% (21.7-26.2%)	40.9% (39.2-42.5%)
Pain or discomfort (recurs periodically)	77.3% (73.9-80.4%)	77.6% (75.1-79.9%)	45.1% (42.5-47.8%)	56.0% (54.1-57.9%)
Pain or discomfort reduces activity ^A	71.6% (68.0-75.0%)	71.0% (68.3-73.5%)	27.8% (25.4-30.2%)	42.3% (40.6-44.1%)
Pain interfered with normal work (quite a bit or extremely) ^B	40.0% (36.3-43.9%)	27.3% (24.8-30.0%)	3.2% (2.4-4.2%)	12.2% (11.3-13.2%)

Notes:

A – Asked of those who said yes to whether pain or discomfort is present and recurs periodically; rate denominator is the number who said yes to having pain or discomfort that recurs periodically.

B – Asked of all respondents.

The STCL pain or discomfort indicators are based on questions from PALS (Participation and Activity Limitation Survey). The STCL questions are so different from the CCHS 2007-08 pain questions, which came from the Health Utilities Index Mark 3 (Table 7) that it was felt the CCHS pain indicators could not be used as reliable general population comparators for the STCL rates.

Chronic pain is of considerable interest in Veterans' health because it is common among Veterans entitled to VAC programs, as in other nations (Thompson et al 2009, Clark et al 2005). Musculoskeletal and neurological disorders are most often associated with chronic pain however chronic pain can also occur in disorders of all other organ systems. Chronic pain is more prevalent with age in the general population (Ramage-Morin 2008). Of particular importance to VAC and other Veterans' administrations, chronic pain often is comorbid with mental health conditions, particularly when musculoskeletal disorders co-occur (Thompson et al 2009).

Table 7: STCL and CCHS 2007-08 pain questions compared.

STCL	CCHS 2007-08
Interviewer's preamble: None given immediately prior to the first pain question, however preceding this section the following reminder was provided by the interviewer several times: "Remember, we're interested in conditions diagnosed by a health professional." It was last delivered several questions before the pain questions.	Interviewer's preamble immediately prior to the first pain question: "The next set of questions asks about the level of pain or discomfort you usually experience. They are not about illnesses like colds that affect people for short periods of time."
Answered "yes" to: CCC_Q36 "Do you have any pain or discomfort that is <u>always present</u>?"	Answered "no" to: HUP_Q28 "Are you <u>usually free of pain or discomfort</u>?"
CCC_Q37 "Do you have periods of pain or discomfort that reoccur from time to time?"	HUP_Q29 "How would you describe the usual intensity of your pain or discomfort?"
CCC_Q38 "Does this pain or discomfort reduce the amount or the kind of activities you can do?" Asked of those who said "yes" to CCC_Q36, and "yes" to CCC_37	HUP_Q30 "How many activities does your pain or discomfort prevent?" Asked of those who said "no" to HUP_Q28. The comparator sums three groups: those who answered either a few, some or most activities.

Respiratory: Asthma and Chronic Obstructive Pulmonary Disease (COPD)

Few reported asthma (6%) and COPD (3%), and both rates were not statistically different from the general population (Table 5). Too few non-clients reported COPD to compare with clients. COPD is more common at ages older than most of the STCL population.

Cardiovascular: Heart Disease, Stroke Effects and High Blood Pressure

The rate of heart disease (4%) was not significantly different from the general population. The rates of reporting heart disease for the two VAC client groups were very slightly higher than adjusted rates for the general population (NVC 5% versus 3%, DP 6% versus 4%). The rate of reporting heart disease for non-clients (3%) was lower than the rate for DP clients (6%) but not statistically different than NVC clients (5%).

The rate of reporting effects of stroke was not significantly different from the general population. Too few reported effects of stroke to draw any conclusions about the subgroups.

The STCL total population rate of having high blood pressure (18%) was higher than the general population (14%). Of those who currently did not have high blood pressure, 9% reported that they had ever been diagnosed with the condition (data not shown in table). The rate for non-clients (15%) was not different from the general population, whereas the rates for the two VAC clients groups were both higher (NVC 25% versus 14%, DP 26% versus 17%). While the rates of obesity were also higher in both VAC client groups, it is not yet known whether there was a correlation between the two conditions in these groups.

Diabetes

The rate of diabetes (6%) was not significantly different from the adjusted rate for the Canadian population. Compared to non-clients (4%), NVC clients (9%) and DP clients (8%) had higher rates of diabetes. Diabetes is more common at ages greater than most of the STCL population.

Cancer

Very few (1%) Veterans reported being diagnosed with cancer by a health professional. This rate was not different from the adjusted Canadian population rate. The sample sizes for the client status groups were too small to analyse individually. Cancer is more common at ages older than most of the STCL population.

Bowel Disorders

Bowel disorders included conditions such as Crohn's Disease, ulcerative colitis, Irritable Bowel Syndrome and bowel incontinence. The rate of bowel disorders (7%) was higher than the adjusted rate for the Canadian population of 3%. The difference was due to the

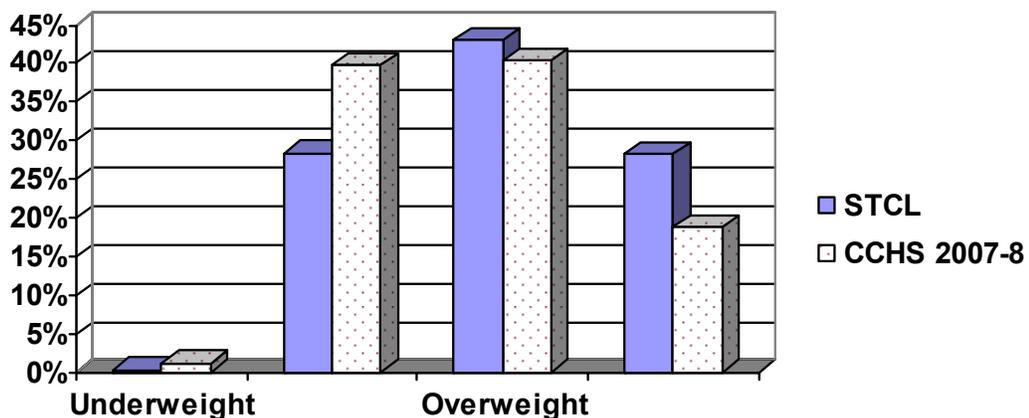
high rates reported among clients: NVC clients (14%) and DP clients (11%) had rates of bowel disorders nearly triple the rate reported by non-clients (4%).

Weight

To assess the health risks of obesity, the World Health Organization and Health Canada use guidelines based on Body Mass Index (BMI), a measure that examines weight in relation to height and allows for distinguishing between overweight and obesity. Obesity has been linked with many chronic diseases, including hypertension, type II diabetes, cardiovascular disease, osteoarthritis and certain types of cancer. Obesity also plays a role in the management of disability.

The STCL population had higher rates of obesity (28%) compared to the Canadian population, and obesity rates were higher among VAC clients (NVC 35%, DP 36%) than non-clients (24%). Overweight rates were not statistically different between the total STCL population, subgroups and the general Canadian population (Table 5, Figure 6).

Figure 6. Body Mass Index categories compared to Canadian general population.



Overweight and obesity prevalences have increased over time in the Canadian general population (Le Petit & Berthelot 2006, Shields et al 2010, Torrance et al 2002, Tremblay et al 2002). This trend parallels other countries, including Finland, New Zealand, the UK, and the US (Flegal 1999). There is limited historical data on fitness levels of CF personnel, studies involving self-reported height and weight collected in surveys and during recruit physical fitness testing have indicated increased prevalence of overweight among CF recruits over the past several years (Lee 2010, Sudom et al 2010).

Studies of serving military populations have demonstrated that despite the existence of physical fitness standards, military populations are also experiencing a trend towards increased prevalence of overweight which mirrors that of the general population (e.g., Knapik et al 2006). In a study of US military Veterans with PTSD, the prevalence of overweight or obesity was 84%, exceeding the US general population level of 65%

(Vieweg et al 2006). Overweight/obesity was associated with service-connected disability and comorbid medical conditions (Vieweg et al 2006). A national sample of U.S. Veterans found those receiving VA health care had higher rates of obesity than the general population, with significant levels of comorbid conditions such as diabetes and hypertension, and disability (Nelson 2006). Although health care-seeking Veterans tended to be older and/or have higher rates of disease and disability, rates of overweight and obesity among the entire U.S. Veteran population, regardless of VA health care status, were found to be similar to that of the general population (Almond et al 2008).

There are several limitations in using BMI as a measure of health risk, including not measuring weight fluctuation, effect of high muscularity in younger age groups or fit populations, lack of information about body fat distribution, and uncertainty about the appropriateness of the BMI classification system to all Canadian populations (Health Canada, 2003, Janssen et al 2002).

Self-report can underestimate weight and overestimate height, which can lead to underestimates of BMI and therefore underestimates of the prevalence of obesity (Shields et al 2008a, 2008b). Self-reported BMI has generally been considered acceptable for analyzing associations with indicators of health in epidemiological studies (Nieto-Garcia, Bush, & Kayl, 1990; Palta, Prineas, Berman, & Hanna, 1982; Pirie, Jacobs, Jeffery, & Hannan, 1981; Spencer, Appleby, Davey, & Key, 2001). However, Shields et al (2008) showed that misclassification can lead to erroneously elevated associations between overweight and obesity-related health conditions, because of the tendency in self-reporting to minimize BMI among those who really are obese. This effect will need to be considered in interpretation of the STCL data. Despite these limitations, BMI is still considered a useful measure of obesity and overweight, and there is an association between obesity and adverse health outcomes.

The higher rates of obesity among VAC clients might not be unexpected, given that Veterans seek assistance from VAC with issues related to health problems, and obesity can be associated with health difficulties and disability. Further analysis of the STCL data would shed more light on the role of obesity in Veteran health care.

3.3.3 Chronic Mental Health Conditions

Respondents were asked about a limited number of chronic mental health conditions that had lasted or were expected to last six months or more, and had been diagnosed by a health professional (Table 8). STCL questions about chronic mental health disorders started with the phrase “*Do you have ... (disorder name)*”. Definitions for these indicators are shown in Appendix 1.

Table 8: Chronic mental health conditions.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Anxiety disorder	29.7% (26.3-33.4%)	18.0% (15.9-20.3%)	4.6% (3.6-5.91%)	10.0% (9.06-11.1%)
Comparator ^A	4.7% (4.0-5.4%)	4.6% (3.9-5.3%)	4.6% (3.9-5.3%)	4.6% (3.9-5.3%)
Depression or anxiety	51.2% (47.3-55.1%)	34.8% (32.1-37.6%)	11.0% (9.45-12.9%)	20.3% (19.0-21.7%)
Mood disorders (mania, dysthymia or bipolar disorder)	9.2% (7.1-11.6%)	5.6% (4.4-7.0%)	x	3.2% (2.7-3.9%)
PTSD	42.5% (38.7-46.4%)	24.5% (22.0-27.1%)	x	11.0% (10.1-11.9%)

Notes:

A – Rates are CCHS 2007-08 age-sex standardized to STCL. Published (CANSIM) CCHS confidence interval not available, so applied highest CCHS CI for STCL indicators (perceived health, overweight and sense of community belonging CI ± 0.7%).

X – Unreliable data, sample size < 30.

Anxiety Disorders

The rate of anxiety disorder (10%) was higher than the adjusted rate for Canadian general population (5%; Table 8). Non-clients reported anxiety disorders at the same rate as the general Canadian population (5%). Most of the elevated rate in the STCL population was contributed by the DP clients (18%) and NVC clients (30%), indicating that most who had anxiety were already VAC clients.

Depression and Anxiety

The presence of depression or anxiety diagnosed by a health-professional was asked in a single question (Table 8) for which a national comparator has not been identified. Overall, 20% of the total STCL population reported either or both depression and anxiety. A tenth of non-clients (11%) reported either or both compared to a third of DP clients (35%) and half of NVC clients (52%).

Mood Disorders

The rate of mood disorders was 3% (Table 8), slightly higher for VAC clients (NVC 9%, DP 6%). Too few (<30) non-clients reported mood disorders to calculate a reliable rate estimate.

Posttraumatic Stress Disorder (PTSD)

PTSD was reported by 11% of the total population, 25% of DP clients, and 43% of NVC clients (Table 8). Too few (<30) non-clients reported PTSD to calculate a reliable rate estimate.

Suicidal Ideation and Attempts

STCL respondents were asked about lifetime suicidal thoughts (Table 9). Those who said yes were asked whether that had happened in the prior 12 months, and whether they had attempted suicide. Those who said yes to the latter were asked if they had made attempts in the prior 12 months.

In the 12 months prior to the survey, 6% of the total population had suicidal ideation (thinking about suicide; Table 9). Rates of 12-month suicidal thinking were highest for NVC clients (16%) followed by DP clients (9%) and non-clients (4%). Among the total population, 18% seriously considered committing suicide or taking their own life some time in their lives. The rate for non-clients was the lowest (12%). This rate was higher for DP clients (26%) and highest for NVC clients (40%). As in most civilian, military and Veteran studies, women were more likely than men to report contemplating suicide.

Suicidal ideation is much more common than suicidal attempts, which in turn are more common than completed suicide. Very low numbers had past 12-month suicide attempts: 1% of the STCL population, and too few to produce reliable rates for the three subgroups. The estimated lifetime suicide attempt rate for the total population was 6%. The rate was lower for non-clients (4%), higher for DP clients (8%) and highest for NVC clients (14%) (Table 10).

Table 9: Suicidal thoughts.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Suicide Ideation 12 Months - Male	15.7% (12.9-18.9%)	8.4% (6.8-10.2%)	3.3% (2.4-4.5%)	5.6% (4.8-6.5%)
Suicide Ideation 12 Months - Female	x	x	x	7.2% (5.0-10.3%)
Suicide Ideation 12 Months - Total	16.3% (13.6-19.4%)	8.5% (7.0-10.3%)	3.5% (2.6-4.6%)	5.8% (5.0-6.6%)
Suicide Ideation Lifetime - Male	39.5% (35.5-43.6%)	24.9% (22.3-27.6%)	10.9% (9.22-12.9%)	16.8% (15.4-18.2%)
Suicide Ideation Lifetime - Female	42.3% (31.8-53.6%)	32.8% (25.0-41.7%)	20.1% (14.7-26.9%)	24.9% (20.4-29.9%)
Suicide Ideation Lifetime - Total	39.8% (36.1-43.7%)	25.7% (23.3-28.4%)	12.0% (10.4-13.9%)	17.7% (16.4-19.1%)

Note: x – Unreliable data, sample size < 30.

Table 10: Suicide attempts.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Suicide Attempts Past 12 Months	x	x	x	1.0% (0.7-1.5%)
Suicide Attempts Lifetime	14.2% (11.6-17.1%)	7.9% (6.5-9.7%)	3.6% (2.7-4.7%)	5.5% (4.7-6.4%)

Note: x – Unreliable data, sample size < 30.

Mental Health Discussion

General Population Comparisons

No national general population comparators were found for the depression/anxiety, mood disorders and PTSD questions. Patten et al (2006) analyzed CCHS 1.2 data, estimating the rates of major depressive episode for the general Canadian population as 12.2% lifetime, 4.8% past year and 1.8% past 30 days based on CIDI. This finding cannot be directly compared to STCL findings owing to differences in survey questions. The word “depression” was not used in the STCL survey question for mood disorders as it had been in CCHS surveys (Table 11). This difference in wording limits comparisons to the general population.

Table 11: STCL and CCHS 2007-08 mood disorder questions compared.

STCL	CCHS 2007-08
CC_Q31 “Remember, we're interested in conditions diagnosed by a health professional. Do you have a mood disorder such as mania, dysthymia or bipolar disorder?”	CCC_Q280 “Remember, we're interested in conditions diagnosed by a health professional. Do you have a mood disorder such as depression , bipolar disorder, mania, or dysthymia?”

Estimates of the prevalence of PTSD in the civilian population vary. PTSD questions have not been included in CCHS general population health surveys. Sareen et al (2007b) noted that lifetime civilian general population rates of PTSD in other countries were generally estimated at 7–12%. Van Ameringen et al (2008) conducted a smaller national telephone survey of Canadians aged 18 and older, finding rates of 9.2% lifetime and 2.4% one-month, based on a modified version of the CIDI PTSD module. They cited two regional Canadian studies that reported one-month rates of full PTSD in Winnipeg of 1.2% for men and 2.7% for women and, based on a single question, a rate of 10.7% among Ontario women.

The very low rate of PTSD reported by non-clients raises several speculations, including possibilities that the survey had low sensitivity because STCL did not use a symptom-based instrument to detect PTSD; that PTSD rates might be higher but the disorder has not been recognized or diagnosed; or that most who had PTSD already were VAC clients.

No current national comparator data were found for suicidal ideation and suicide attempts that could be adjusted to the STCL data for direct comparison, however the STCL 12-month ideation rate (5.8%) was similar to the unadjusted 4.0% rate for the Canadian general population reported by Belik et al (2010) in their analysis of CCHS 2002. They found that the rate for serving personnel (3.8%) from the 2002 CF Supplement to CCHS 2002 was not statistically different from the general population

rate, while the difference in 12-month suicide attempt estimates for the general population (0.6%) and serving personnel (0.2%) were statistically significant⁵.

VAC Clients

The higher rates of mental health disorders, suicidal ideation and suicide attempts among VAC clients were expected for two reasons: VAC's mandate is to assist Veterans with health issues, and chronic physical and mental health conditions are associated. The large rates for VAC clients suggest that many of the STCL population who had mental health disorders were already receiving benefits from VAC.

The VAC client population is better compared to populations undergoing treatment for health issues than to the general population. In a very large U.S. study of Iraq and Afghanistan Veterans using U.S. Veterans Administration health care, 37% received mental health diagnoses, 22% were diagnosed with PTSD and 17% with depression (Seal et al 2009). Richardson et al (2010) found in a literature review that PTSD rates in treatment-seeking Veterans ranged 37–80%. These rates are not directly comparable to STCL.

An analysis of the 1999 Veterans Care Needs survey estimated PTSD rates in post-Korean War VAC CF clients that ranged 8-15% depending on cutoff criteria used, and an additional 10% had symptoms just short of required for the diagnosis of PTSD (Asmundson 2000). These estimates are not directly comparable to STCL estimates because they were based on analysis of the PTSD PCL checklist, not self-report.

Suicidal ideation is more common among people with chronic health conditions (Thompson et al 2010), and VAC clients more often had chronic health problems than non-clients. Suicidal thinking and behaviours are much more common in both civilian and Veteran populations being treated for mental health disorders than among the general populations and persons not undergoing treatment (Desai 2007, Zivin 2007). Suicidality is associated with both chronic physical and mental health conditions (Fuller-Thomson 2008, Thompson 2010).

While higher rates of suicidal ideation and suicide attempts among VAC clients are not unexpected for persons under treatment, these findings clearly support ongoing suicide prevention efforts by VAC and all other agencies and providers serving Veterans and their families. VAC and CF Health Services recently developed evidence-based frameworks for suicide prevention and used them to evaluate and enhance suicide prevention activities (VAC Suicide Prevention Approach Working Group 2010, Thompson et al 2010, Zamorski 2010). Further analysis of STCL suicidal ideation and attempt data will yield additional insights to Veteran suicidality and inform prevention efforts.

⁵ Belik et al (2010) gave unadjusted rates for the general Canadian population surveyed in CCHS 1.2 during 2000-1 and for serving personnel surveyed with the CF Supplement to CCHS 1.2, over the age ranges typical for serving personnel.

Other Military and Veteran Surveys

HLIS 2004 found a prior-12-month estimated rate for major depressive disorder of 7% for serving CF Regular Force personnel, based on the Composite International Diagnostic Interview (CIDI; CFHS 2005). The CF Supplement of CCHS 1.2 (2002) found that 15.1% of CF Regular Force personnel reported symptoms consistent with one of five mental health disorders or alcohol dependence in the 12 months prior to interview: 7.6% major depression, 4.2% alcohol dependence, 3.6% social phobia, 2.8% PTSD, 2.2% panic disorder and 1.8% generalized anxiety disorder (Statistics Canada 2003). Sareen et al (2007a) analyzed the CCHS 1.2 Canadian Forces Mental Health Supplement, a nationally representative survey of serving CF personnel conducted by Statistics Canada and DND. The rate of any past-year mental health disorder using the CIDI was 14.9% (95% CI 14.0-15.9%), and past-year rates of specific disorders were major depression 6.9% (6.2-7.6%), panic disorder 1.8% (1.4-2.1%), social phobia 3.2% (2.8-3.7%), generalized anxiety disorder 1.7% (1.4-2.0%), and PTSD 2.3% (2.0-2.8%). These rates are not directly comparable to STCL findings because they are not adjusted to STCL, and the CCHS CMHS asked about past-year conditions and used CIDI whereas STCL used single questions in the format “do you have... (name of disorder)”.

In the large U.S. Millennium Cohort study (Gray et al 2002), the baseline 12-month prevalence of common mental illnesses was estimated to be 26% (Riddle et al 2007). The prevalence of mental health illness other than alcohol dependence was found to be comparable with other military and general populations. Compared to the general population PTSD, major depressive disorder and panic syndrome were less prevalent than in the general U.S. population.

PTSD rates tend to be higher among service personnel who have experienced more combat, but rate estimates vary widely. Ramchand et al (2010) reviewed estimates for service personnel deployed to war zones, finding a wide range (1–60%) among population-based studies depending on methods used to ascertain PTSD (self-report, screening tools or clinician records), populations surveyed and study methodologies, although most estimates from large studies were in the low-middle of that range. They concluded that estimates outside 5–20% likely represent special populations. Richardson et al (2010) conducted a critical review of published research on combat-related PTSD, finding a similar wide range in rate estimates in U.S. military Veterans since the Vietnam War (2-17%), and narrow and lower ceiling ranges for U.K. (3-6%) compared to U.S. (4-17%) Iraq War Veterans. Both author groups identified numerous limitations in rate estimates among published studies and noted the need for future research to establish PTSD prevalence rates, untangle confounders and further understand the disorder in Veterans.

Summary

In summary, the findings confirm (1) that mental health issues are prevalent among CF Regular Force Veterans who released in 1998-2007, as they are in the general Canadian population and serving CF personnel, and (2) that rates are higher among VAC clients, as they are for other populations under treatment for health problems.

STCL mental health findings support ongoing work at DND/CF and VAC to ensure access to effective mental health care for former CF personnel. Further analysis of STCL data will yield additional insights into the mental health care needs of Veterans.

3.3.4 Comorbidity

“Comorbidity” means the presence of two or more health conditions in the same person. Table 12 summarizes comorbidity findings for chronic health conditions included in STCL. Comorbidity is a measure of population health. Comorbidity is important because the presence of additional conditions complicates both the diagnosis and treatment of symptoms and disorders, and the management of disabilities. Comorbidity requires good coordination, teamwork and communication among service and health care providers.

Table 12: Comorbidity of chronic physical and mental health conditions.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
No chronic health condition	4.7% (3.3-6.6%)	5.8% (4.6-7.4)	43.3% (40.7-46.0%)	30.6% (28.8-32.5%)
At least one physical health condition	90.7% (88.2-92.7%)	91.6% (89.8-93.1%)	53.6% (50.9-56.3%)	66.3% (64.4-68.2%)
At least one mental health condition	59.9% (56.0-63.6%)	40.2% (37.4-43.1%)	12.8% (11.1-14.7%)	23.6% (22.1-25.0%)
Comorbidity: two or more conditions, but either all physical or all mental health conditions, but not both	40.1% (36.4-43.9%)	56.6% (53.7-59.4%)	46.9% (44.2-49.6%)	48.8% (46.9-50.8%)
Comorbidity: Two or more conditions, and at least one physical and one mental health condition	55.2% (51.4-59.0%)	37.6% (34.8-40.4%)	9.8% (8.31-11.5%)	20.5% (19.2-21.9%)

Notes:

Physical health conditions: hearing problem, arthritis, back problems, high blood pressure, heart disease, stroke, bowel disorder, ulcers, cancer, diabetes, asthma, COPD.

Mental health conditions: mood disorder, depression/anxiety, anxiety disorder, PTSD.

Less than a third (31%) of the total STCL population had none of the chronic health conditions. Physical health conditions were three times more prevalent than mental health conditions (66% versus 24%). A fifth reported had at least one of each (21%).

Non-clients reported fewer conditions and less comorbidity than VAC clients. Almost half (43%) of non-clients reported having none of the chronic health conditions included in the STCL interview. More than 90% of VAC clients reported at least one chronic physical health condition. About 60% of NVC clients and 40% of DP clients reported at least one mental health condition and 55% of NVC clients 38% and of DP clients reported at least one of each.

Physical health conditions were reported more frequently than mental health conditions in each of the subgroups: 54% versus 13% by non-clients; 92% versus 40% by DP

clients; and 91% versus 60% by NVC clients. Both physical and mental health conditions were reported by more than a third of DP clients, and more than half of NVC clients.

The combination of pain/discomfort, a chronic musculoskeletal condition and a chronic mental health condition were reported in 16% of the total STCL population, was less common among non-clients (6%), and was very common among VAC clients: DP 32% and NVC 48% (Table 13).

Table 13: Comorbidity of pain/discomfort with chronic musculoskeletal and mental health conditions.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Pain or discomfort with at least one chronic musculoskeletal chronic health condition and at least one mental health condition ^A	48.4% (44.6-52.3%)	31.7% (29.1-34.4%)	5.8% (4.7-7.2%)	15.8% (14.7-17.0%)

Notes:

A – Pain or discomfort (always or recurring); plus any of mood disorder, depression/anxiety, anxiety disorder or PTSD; plus any of arthritis or back problem.

Comorbidity of musculoskeletal disorders, chronic pain and mental health conditions is common both in civilian populations (Currie and Wang 2004, Ramage-Morin 2008, Ramage-Morin and Gilmour 2010) and among former military personnel receiving benefits from Veterans administration programs in Canada and around the world. Frayne et al (2010) found in a large study of U.S. Iraq/Afghanistan Veterans that those with PTSD had significant comorbid physical health conditions: for women median 7.0 conditions versus 4.5 for those with no mental health conditions, and for men 5.0 versus 4.0. Musculoskeletal conditions and hearing disorders were common, but the range of conditions was wide. In an analysis of the Canadian general population using CCHS data, Currie and Wang (2004) reported that the prevalence of chronic back pain was estimated at 9% of persons 12 years and older, while rates of major depression using CIDI were estimated at 6% for pain-free persons and 20% for persons who also had chronic back pain. Major depression rate increased in a linear fashion with greater pain severity. In logistic regression modeling, back pain emerged as the strongest predictor of major depression after adjusting for confounders such as demographics and comorbidity. The combination of chronic back pain and major depression was associated with greater disability than either condition alone. Though less common at younger ages, Ramage-Morin and Gilmour (2010) found that chronic pain was reported in 9% of males and 12% of females aged 12-44 years, and found associations between chronic pain, chronic physical and mental health conditions, disability and several determinants of health.

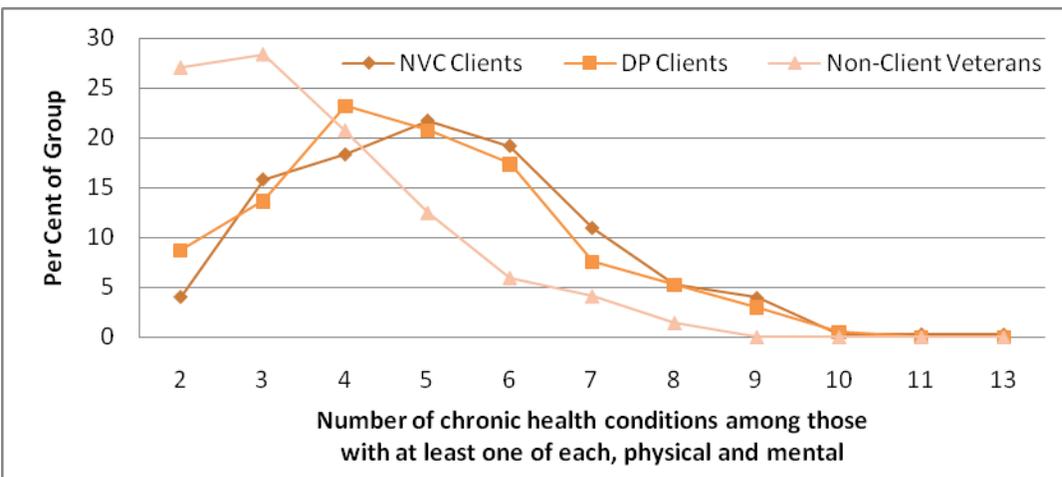
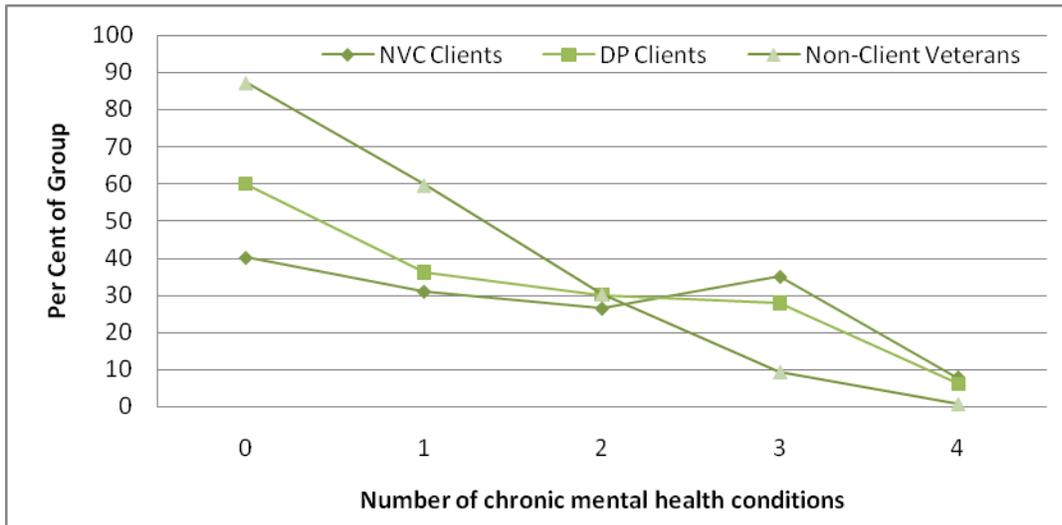
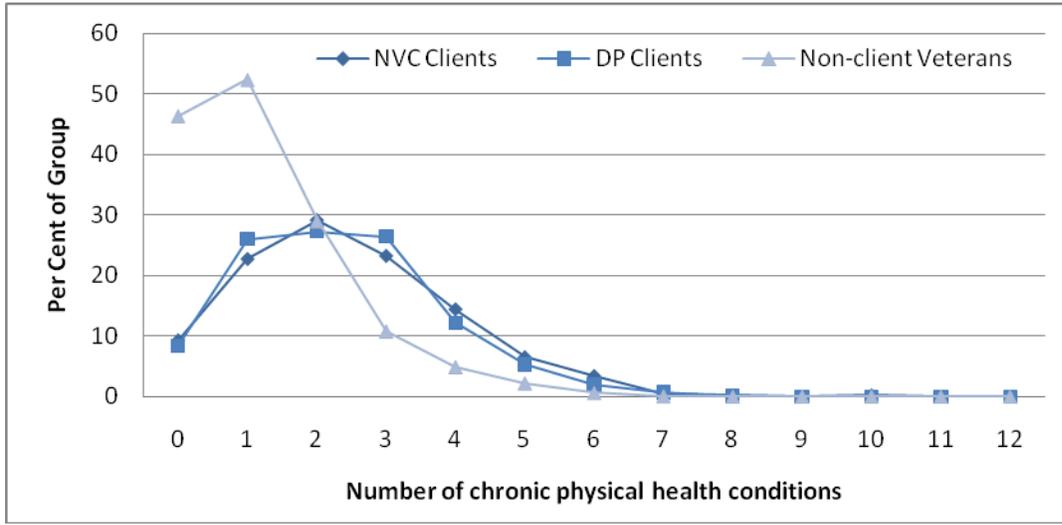
Two-thirds of the STCL population in both VAC client groups reported having 4-6 chronic physical and mental health conditions (Figure 7), a degree of case-complexity typical of Veterans receiving treatment in other studies. In a large study of Veterans obtaining treatment in U.S. VHA outpatient facilities, Kazis et al (1998) reported an

average of 5.8 conditions per Veteran using a validated interview method for obtaining more comprehensive medical histories than was used in STCL.

This preliminary analysis of STCL comorbidity measures is limited. It is based on self-report rather than clinical records, the survey questions did not ask about all physical and mental health conditions, and the analysis is only descriptive. In spite of these limitations, it is clear that a significant proportion of Regular Force Veterans who released during 1998-2007 and were receiving benefits from VAC had complex physical and mental health comorbidities. This finding has considerable implications for the design of programs, teams and systems for assisting Veterans with health issues in the Veteran phase of life after service.

Further analysis of STCL data would provide a clearer picture of comorbidity to better define Veterans' needs. It is important to determine, for example, the degree to which VAC clients have comorbid health conditions that are not found to be related to service, yet complicate care of those conditions that are service-related or contribute to the overall health of clients.

Figure 7: Comorbidity of chronic physical and mental health conditions



3.3.5 Attribution to Military Service

Each chronic health condition question was followed by “Do you think this condition is related to your military service?” Belief in service attribution was common in the STCL population (Table 14). Attribution was most common for PTSD, hearing loss, pain and discomfort, musculoskeletal disorders and mental health conditions other than PTSD. Service attribution was more common for all conditions among VAC clients than non-clients. For chronic conditions most commonly reported by non-clients, more than half of them attributed their conditions to military service.

The conditions that were most commonly reported by STCL respondents also had the highest rates of service attribution. These conditions have also received media attention in recent years (Ipsos Reid 2010), and are the most common reasons for eligibility to VAC disability programs and rehabilitation services (unpublished data). Service attribution was less frequently reported for age-related chronic conditions that were rarer in the STCL age groups and more likely to be associated with mortality later in life, such as cancer, asthma, heart disease, stroke, and high blood pressure (below the more common shaded conditions in Table 14). Eligibility for VAC programs, benefits and services usually is based on demonstrating some type of relationship to service, and the effect of this knowledge among respondents on the rate of reporting attribution to service is unclear.

Worldwide, service attribution belief is an enduring dimension of Veterans’ health care (Engel et al 2004a, 2004b, 2006). For example, after World War I (WWI), Veterans’ middle-aged disabilities were popularly attributed to “pre-ageing”, a notion that in part led to the War Veterans’ Allowance (Neary 2009, Brown 1995, Burke 1939).

Further analysis could clarify whether VAC clients, who more often reported service attribution for their chronic health conditions, had applied to VAC with all the conditions they reported, and shed light on why so many non-clients reported having chronic health conditions they believed were attributable to service yet were not VAC clients.

Table 14: Self-reported attribution to military service of chronic health conditions.

Chronic Condition	NVC Clients		DP Clients		Non-clients		Total Population	
	Group Rate ^A	Service Attribution ^B	Group Rate	Service Attribution	Group Rate	Service Attribution	Group Rate	Service Attribution
Post-traumatic stress disorder (PTSD)	42.5%	99.3%	24.5%	98.6%	x ^C	x	11.0%	97.2%
Hearing problems	51.2%	95.2%	47.4%	93.8%	17.5%	83.0%	27.8%	89.5%
Pain or discomfort always present	80.3%	98.3%	72.7%	96.2%	23.9%	73.6%	40.9%	87.7%
Arthritis	45.3%	94.1%	44.7%	94.9%	12.6%	62.3%	23.4%	83.1%
Back problems not fibromyalgia/arthritis	67.3%	95.5%	63.1%	92.4%	27.9%	63.0%	40.1%	79.2%
Anxiety disorder	29.7%	94.2%	18.0%	85.4%	4.6%	63.0%	10.0%	80.5%
Mood disorder	9.2%	94.9%	5.6%	90.5%	x	x	3.2%	78.8%
Depression or anxiety	51.2%	91.2%	34.8%	89.4%	11.0%	57.9%	20.3%	78.4%
Bowel disorder	13.5%	76.7%	11.4%	66.2%	4.3%	x	6.9%	56.1%
Asthma	8.1%	57.7%	7.2%	49.3%	5.0%	x	5.8%	37.2%
Have high blood pressure	24.7%	51.3%	26.0%	51.1%	14.7%	24.1%	18.4%	36.8%
Heart disease	5.4%	x	6.0%	46.6%	3.2%	x	4.1%	37.2%
Diabetes	8.6%	x	7.9%	39.0%	4.2%	x	5.5%	28.8%
Effects of a stroke	x	x	1.5%	x	0.4%	x	0.7%	x
Have cancer	1.5%	x	1.3%	x	1.1%	x	1.2%	x

Notes:

Shading highlights conditions attributed to military service at > 75% rate by the total population

A. Weighted rate of reporting the condition, from Table 5 and Table 8.

B. Weighted proportions of those responding “yes” to the question “Do you think this condition is related to your military service?” after self-reporting the chronic condition.

C. “x” indicates sample size < 30.

3.4 Disability

STCL included several indicators which can be used to measure disability, however only two are discussed in this report: a measure of participation and activity limitation taken from Canadian population surveys (Appendix Table 1), and the SF-12.

3.4.1 Participation and Activity Limitation

The first indicator is a derived measure of participation and activity limitation based on a series of questions used in both CCHS and PALS (Participation and Activity Limitation Survey) (Table 15). The questions asked the degree to which respondents (1) had difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing similar activities; and (2) felt that a long-term (>6 months) physical or mental condition reduced their activities at home, school, work, transportation or leisure.

The overall STCL population rate of participation and activity limitation (56%) was twice that of the adjusted Canadian population (28%; Table 15). Although most of this difference is explained by the very high rates reported by the VAC clients (> 90%), the rate for non-clients (38%) was also higher than the adjusted rate for the Canadian population (27%).

Table 15: Participation and activity limitation.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Participation and activity limitation	95.3% (93.4-96.7%)	91.6% (89.8-93.1%)	37.7% (35.2-40.4%)	56.1% (54.3-57.9%)
Comparator ^A	28.1% (27.6-28.7%)	30.6% (30.1-31.2%)	26.6% (26.1-27.2%)	27.7% (27.2-28.3%)

Note: A – Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

Those who reported participation and activity limitation were then asked for the best description of the cause of their condition and provided a list of options (Table 16). The great majority picked military work conditions (75%). Almost two thirds of non-clients who reported participation and activity limitation also picked this attribution (61%), as did the majority of DP clients (87%) and NVC clients (85%). It is not clear why so many non-clients picked this attribution, given they were not VAC clients. Of the non-clients, 17% picked ageing or disease/illness. It is not unexpected that more VAC clients would pick military work conditions, since eligibility generally requires a service connection.

Table 16: Self-attributed cause of participation and activity limitation.

Cause	NVC Clients	DP Clients	Non-Clients	Total
Military work conditions	85.3%	86.6%	60.6%	74.9%
Ageing	x	x	10.0%	5.0%
Accident at work	5.1%	5.9%	x	4.6%
Disease or illness	x	x	6.5%	3.5%
Other	x	x	x	3.1%
Emotional/mental health problem	x	x	x	2.3%
Accident at home	x	x	x	x
Motor vehicle accident	x	x	x	x
Other accident	x	x	x	x
From birth or genetic	x	x	x	x
Civilian work conditions	x	x	x	x
Use of alcohol or drugs	x	x	x	x

Note:

x – Unreliable data: sample size < 30.

3.4.2 SF-12 as a Measure of Disability

SF-12 scores were significantly lower for VAC clients than non-clients, particularly NVC clients (Table 3), which is consistent with higher levels of disability. The SF-12 measures health-related quality of life, and inability to perform activities satisfactorily contributes to lowered quality of life. Four of the twelve SF-12 questions ask about ability to accomplish work and daily activities, two for physical health and two for mental health. Kazis et al (1998), in a large U.S. study of Veterans treated in VHA outpatient facilities, found that worse health status measured using the SF-36V correlated with measures of more disability. Sanderson and Andrews (2001, 2002b) used the SF-12 to measure disability in a large Australian household survey of adults, finding that substantial proportions of persons reported moderate and severe disability associated with mental conditions not usually considered major.

Discussion

Acute and chronic health conditions and the impairments they cause are not disabilities, although that misunderstanding is widespread. Disability occurs when a person with functional impairment caused by a health condition encounters internal coping and adaptation and external social and physical environmental barriers dis-abling them from participating optimally in life. These indicators reflect the presence of a mixture of impairments and disability in the STCL population, but not what contributed to them. STCL did not ask about the types of barriers encountered by respondents. Optimal management of disabilities requires both optimizing care of health conditions and reduction of internal and external barriers to optimal participation in work, recreation, family and community (Thompson and MacLean 2010).

The survey also included questions on basic activities of daily living that they were not analyzed for this initial report. Further studies could consider other instruments, such as those based on the World Health Organization’s International Classification of Functioning, Disability and Health (ICF)⁶. Further analysis of the STCL data will provide additional insights into disabilities experienced by Veterans.

3.5 Determinants of Health

Definitions for determinants of health indicators are shown in Appendix 1.

3.5.1 Health Behaviours

Smoking and Heavy Drinking

STCL asked several questions about smoking and alcohol consumption, however only three were included for this report (Table 17).

Table 17: Smoking and drinking.

Indicator	NVC Clients	DP Clients	Non-clients	Veterans
Current smoker - daily	25.2% (21.9-28.7%)	19.4% (17.2-21.8%)	18.2% (16.1-20.3%)	19.0% (17.5-20.6%)
Comparator ^A	23.0% (22.5-23.5%)	22.6% (22.1-23.1%)	22.7% (22.2-23.2%)	22.7% (22.2-23.2%)
Current smoker - daily or occasional	31.2% (27.7-34.9%)	23.7% (21.3-26.2%)	23.8% (21.6-26.2%)	24.4% (22.7-26.1%)
Comparator ^A	27.8% (27.3-28.3%)	26.8% (26.3-27.3%)	28.4% (27.9-28.9%)	27.9% (27.4-28.4%)
Heavy drinker (5 or more drinks on one occasion, 12 or more times a year)	22.4% (19.4-25.9%)	24.8% (22.4-27.4%)	26.2% (23.9-28.7%)	25.6% (23.9-27.4%)
Comparator ^A	24.2% (23.8-24.7%)	22.7% (22.3-23.2%)	26.7% (26.3-27.2%)	25.5% (25.1-26.0%)

Note:

A – Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

CF Regular Force Veterans who released 1998-2007 reported lower rates of current daily or occasional smoking than the general Canadian population. NVC clients reported higher rates of smoking than DP clients or non-clients.

The STCL population had rates of heavy drinking (5 or more drinks on one occasion, 12 or more times a year) comparable to the general population (Table 17).

⁶ <http://www.who.int/classifications/icf/en/>.

The lower rate of smoking among the STCL population for the group as a whole is encouraging, paralleling findings from the Health and Lifestyle Information Survey (HLIS) of CF serving personnel (CFHS 2005). HLIS 2004 found that only a fifth (20%) were smoking, decreased from HLIS 2000 (24%). This rate of decrease in smoking among CF personnel was greater than the decrease in the general Canadian population (CFHS 2005). The trend toward reduction in smoking was also found among VAC clients in the 1997 Veterans Care Needs Survey (Statistics Canada 1998).

While the rate of binge drinking by serving personnel did not change over the two HLIS surveys, the rate of binge drinking in the general Canadian population increased in the same time period (CFHS 2005).

STCL provided only limited direct insights to risky behaviours that can adversely affect health, since smoking and alcohol consumption are only two of many. Further analysis of additional STCL smoking and alcohol consumption data would yield further insights to these risky health behaviours.

3.5.2 Employment

Four STCL indicators of employment were considered for this report: work since release, work satisfaction (after release and current), unemployment and transferability of knowledge, skills and abilities (KSA) (Table 18).

Table 18: Employment, employment satisfaction and unemployment.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Currently working	45.3% (41.5-49.2%)	61.8% (58.9-64.5%)	75.4% (73.0-77.6%)	69.5% (67.8-71.2%)
Worked since release not currently Working	30.9% (27.4-34.6%)	20.8% (18.6-23.3%)	17.9% (15.9-20.1%)	19.7% (18.2-21.3%)
Worked since release (sum of above)	76.2% (72.8-79.3%)	82.6% (80.3-84.7%)	93.3% (91.9-94.5%)	89.2% (88.1-90.2%)
Working main activity 12 months after release	38.3% (34.6-42.1%)	42.6% (39.8-45.5%)	58.6% (55.9-61.3%)	52.9% (51.0-54.8%)
Work satisfaction 12 months after release (satisfied or very satisfied)	58.9% (52.6-64.9%)	75.2% (71.2-78.8%)	72.2% (68.9-75.3%)	72.1% (69.5-74.6%)
Working main activity 12 months prior to survey	49.0% (45.2-52.9%)	67.2% (64.5-69.9%)	80.6% (78.4-82.6%)	74.7% (73.1-76.3%)
Work satisfaction 12 months prior to survey (satisfied or very satisfied)	65.6% (60.1-70.6%)	78.2% (75.2-81.1%)	81.8% (79.3-84.0%)	80.1% (78.2-81.9%)
Unemployment rate	15.1% (11.8-19.2%)	5.5% (4.1-7.3%)	7.7% (6.2-9.4%)	7.6% (6.6-8.9%)
Comparator ^A	7.5 (7.0-8.0%)	7.3 (6.8-7.8%)	7.8 (7.3-8.3%)	7.7 (7.2-8.2%)

Notes:

A – Rates are Labour Force Survey August 2010 age-sex standardized to STCL; 95% CIs are from unadjusted rates and applied to the adjusted comparator rates.

Work since Release

The majority (89%) had worked at some point after release (Table 18). About 70% reported they were currently working (past week) and 20% reported they had worked at some point since release but were not currently working. Non-clients (93%) were more likely to have worked since release than DP clients (83%) or NVC clients (76%).

Main Activities and Satisfaction with Work

Respondents were asked about their main activities and satisfaction with activities during the first year after being released from the Regular Force, and the year prior to the survey. The proportion who reported they had worked at a job or run a business increased from 53% to 75% over the period (Table 18). This increase in the proportion working or running a business was offset mainly by reductions in the proportion attending school or training from 15% to 4% and those looking for work from 8% to 2% (Tables 19, 20).

Although the most common main activity during the first year following release for all three subgroups was working at a job or running a business, the proportions reporting this activity were higher for non-clients (59%) than for both client groups. These proportions all increased over the two time periods: NVC clients from 38% to 49%; DP clients from 43% to 67% and non-clients from 59% to 81%.

Almost three-quarters (72%) of the total population were satisfied with their work in the 12 months after release, increased to 80% in the year prior to the survey. Among the client groups, only the increase in satisfaction among non-clients from 72% to 82% was statistically significant. NVC clients were much less likely to be satisfied with their work both in the year after release (59% for NVC clients compared to 75% and 72% for DP clients and non-clients respectively) and the year prior to the survey (66% for NVC clients compared to 78% and 82% for DP clients and non-clients respectively) than DP clients and non-clients.

Unemployment

The Veteran unemployment rate at the time of the survey was the same as the Canadian population rate (8%; August 2010 Labour Force Survey) and the unemployment rate of DP clients was not significantly different from the rate for non-clients (Table 18). However, the unemployment rate for NVC clients (15%) was significantly higher than that of non-clients (8%) and that of the Canadian population (8%).

Table 19: Main activity and satisfaction first 12 months after release.

Main Activity First 12 Months After Release	NVC clients		DP clients		Non-clients		Whole STCL Population	
	Rate ^A	Satisfied ^B	Rate	Satisfied	Rate	Satisfied	Rate	Satisfied
Worked at a job or ran a business	38.3 (34.6-42.1)	58.9 (52.6-64.9)	42.6 (39.8-45.5)	75.2 (71.2-78.8)	58.6 (55.9-61.3)	72.2 (68.9-75.3)	52.9 (51.0-54.8)	72.1 (69.5-74.6)
Retired and not looking for work	8.7 (6.8-11.1)	71.3 (58.2-81.6)	12.5 (10.8-14.6)	72.5 (64.6-79.1)	9.6 (8.2-11.2)	80.6 (73.1-86.3)	10.3 (9.2-11.5)	77.4 (72.3-81.8)
Attended school or training	17.6 (14.8-20.7)	61.5 (52.1-70.1)	16.4 (14.4-18.7)	67.8 (60.7-74.2)	14.1 (12.2-16.1)	74.9 (67.8-80.8)	14.9 (13.6-16.4)	71.6 (66.8-76.0)
Looked for work	6.8 (5.8-9.0)	x	6.9 (5.5-8.5)	x	8.2 (6.8-9.8)	x	7.7 (6.7-8.9)	24.8 (18.9-31.8)
Cared for or nurtured a family member or partner	x	x	x	x	x	x	1.7 (1.3-2.3)	65.5 (50.6-77.8)
Was disabled or on disability	20.9 (17.9-24.2)	x	14.3 (12.4-16.5)	x	x	x	6.5 (5.8-7.3)	15.0 (11.0-20.2)
Worked in the Reserve Force	x	x	3.7 (2.8-5.0)	81.9 (67.8-90.7)	3.8 (2.9-4.9)	88.2 (76.0-94.7)	3.7 (3.0-4.5)	85.6 (77.2-91.2)
Other	x	x	x	x	2.4 (1.7-3.4)	x	2.3 (1.8-3.0)	65.8 (53.3-76.4)
Total	100.0	46.9 (43.0-50.8)	100.0	61.3 (58.4-64.0)	100.0	69.4 (66.9-71.9)	100.0	65.6 (63.7-67.4)

Note:

x – Suppressed as sample size less than 30.

A – Weighted proportion of population with that main activity, and 95% CI.

B – Weighted proportion reporting being satisfied or very satisfied with that main activity.

Table 20: Main activity and satisfaction 12 months prior to survey.

Main Activity Past 12 Months	NVC clients		DP clients		Non Client Veterans		Whole STCL Population	
	Rate ^A	Satisfied ^B	Rate	Satisfied	Rate	Satisfied	Rate	Satisfied
Worked at a job or ran a business	49.0 (45.2-52.9)	65.6 (60.1-70.6)	67.2 (64.5-69.9)	78.3 (75.2-81.1)	80.6 (78.4-82.6)	81.8 (79.3-84.0)	74.7 (73.1-76.3)	80.1 (78.2-81.9)
Retired and not looking for work	7.5 (5.7-9.8)	73.6 (59.7-84.0)	13.3 (11.4-15.3)	78.7 (71.5-84.4)	7.6 (6.4-9.0)	93.3 (87.1-96.6)	9.1 (8.1-10.1)	86.5 (82.4-89.8)
Attended school or training	8.2 (6.3-10.6)	76.2 (62.6-86.0)	x	x	4.2 (3.2-5.5)	84.1 (71.2-91.9)	3.7 (3.0-4.6)	81.7 (72.2-88.5)
Looked for work	x	x	x	x	2.3 (1.6-3.3)	x	2.4 (1.83-3.04)	x
Cared for or nurtured a family member or partner	x	x	x	x	x	x	1.9 (1.4-2.5)	85.6 (75.9-91.8)
Was disabled or on disability	26.1 (22.9-29.7)	x	11.9 (10.2-13.9)	x	x	x	6.1 (5.4-6.9)	14.0 (10.2-19.0)
Worked in the Reserve Force	x	x	x	x	x	x	x	x
Other	x	x	x	x	x	x	1.5 (1.1-2.0)	91.2 (83.8-95.4)
Total	100.0	51.3 (47.4-55.2)	100.0	69.9 (67.2-72.5)	100.0	80.9 (78.7-83.0)	100.0	75.8 (74.1-77.4)

Note:

x – Sample size less than 30.

A – Weighted proportion of population with that main activity, and 95% CI.

B – Weighted proportion reporting being satisfied or very satisfied with that main activity.

Transferability of Knowledge, Skills and Abilities (KSA)

For the majority of Veterans in this study, release from the military led to a second career, not retirement from the workforce. Spiegel and Shultz (2003) studied former U.S. naval officers and found that pre-release planning and the transfer of knowledge, skills and abilities into the civilian work place influenced retirement satisfaction and adjustment to civilian life. STCL respondents were asked eight questions adapted from Spiegel and Shultz (2003) about transferability of their KSAs from military service to their current or most recent civilian job (Table 21).

Of those who had worked since release (89%; Table 18), most strongly agreed or agreed that the experience, education and training gained in the military helped in their current or most recent civilian job (72%; Table 21). However, only one-third reported that the tasks they were performing at work were the same as in the military and 43% reported that the knowledge and skills they use at their most recent job are the same as those used by them in military service.

A quarter or less reported feeling that their current level of prestige, skills and knowledge, authority and importance was much or somewhat *more* than they experienced in military (Table 21). Conversely, the survey found that these Veterans more often reported experiencing much or somewhat *less* in these dimensions of post-transition work experience compared to their recollection of life in service. Less than half (41%) said their income level was much or somewhat more than while in service, and a similar rate (43%) reported their income was much or somewhat less.

NVC clients reported lower levels of KSA transferability than non-clients for six (experience, education and training gained in the military helped and level of prestige, skills and knowledge, authority, importance and income) of the eight questions. Levels were comparable to non-clients for the remaining two questions (actual tasks and knowledge and skills used). However, NVC clients also had higher levels of chronic conditions and disability than non-clients.

DP clients had lower levels of KSA transferability than non-clients for four (level skills and knowledge, authority, importance and income) of the eight questions, comparable levels for three questions (experience, education and training, actual tasks and level of prestige) and a higher level for one (knowledge and skills used).

Table 21: Transferability of knowledge, skills and abilities (KSA).

Indicator	NVC Clients	DP Clients	Non-Clients	Total
<i>Military service helped in current or most recent civilian job: "Strongly agree" or "agree"</i>				
Experience, education and training	63.9% (59.5-68.0%)	72.2% (69.2-74.9%)	72.2% (69.6-74.7%)	71.7% (69.7-73.5%)
<i>Military service the same as most recent civilian job: "Strongly agree" or "agree"</i>				
Actual tasks	28.9% (25.0-33.1%)	35.9% (32.9-39.0%)	31.9% (29.4-34.5%)	32.7% (30.7-34.6%)
Knowledge and skills used	38.3% (34.1-42.7%)	47.4% (44.2-50.6%)	41.1% (38.4-43.9%)	42.5% (40.4-44.5%)
<i>Experience of current or most recent job compared to military service: More = "Much more" or "somewhat more" Less = "Much less" or "somewhat less"</i>				
More Prestige	16.2% (13.1-19.7%)	21.6% (19.1-24.4%)	23.6% (21.3-26.1%)	22.6% (20.9-24.5%)
Less Prestige	63.2% (58.8-67.4%)	52.2% (49.0-55.4%)	44.0% (41.2-46.8%)	47.2% (45.1-49.3%)
More Skills and knowledge	23.2% (19.6-27.2%)	27.0% (24.2-30.0%)	33.9% (31.3-36.7%)	31.6% (29.6-33.6%)
Less Skills and knowledge	49.5% (45.1-54.0%)	42.1% (38.9-45.3%)	30.9% (28.3-33.5%)	34.8% (32.8-36.8%)
More Authority	13.7% (10.9-17.1%)	16.2% (13.9-18.7%)	23.4% (21.0-25.9%)	21.0% (19.3-22.9%)
Less Authority	64.0% (59.6-68.2%)	58.4% (55.2-61.6%)	47.7% (44.9-50.5%)	51.3% (49.2-53.5%)
More Income	18.5% (15.2-22.2%)	27.5% (24.7-30.5%)	47.3% (44.5-50.1%)	40.7% (38.6-42.8%)
Less Income	70.1% (65.9-74.0%)	57.1% (53.9-60.3%)	36.5% (33.8-39.2%)	43.6% (41.6-45.7%)
More Importance	20.7% (17.3-24.5%)	25.2% (22.5-28.1%)	37.9% (35.1-40.6%)	33.7% (31.7-35.8%)
Less Importance	55.5% (51.0-59.8%)	44.1% (40.9-47.3%)	29.8% (27.3-32.4%)	34.9% (33.0-36.9%)

Civilian and military retirement differ in several respects. For example, the average age of release of this population was 46 years. On the other hand, average age of retirement from the public service in Canada was 58 years in 2006-07 (Fox 2008). Military personnel releasing at a younger age may have greater job mobility, since they are less likely to have a family, and may be more appealing to employers since they have more remaining years in which they can be employed (Pinch 1980). Transferring to the civilian workforce may be a difficult experience, especially for those who spent the majority of their career in the military. The military context of service is very different from the civilian workforce context: it is more highly structured for example, with clearly defined ranks and roles. Involuntary release for medical reasons might be more likely to end a military career than in a civilian workplace able to accommodate the worker's health impairments.

There is little published research on long-term outcomes of transition programs and services, in part owing to difficulties contacting former personnel in order to conduct follow-up. The U.S. General Accounting Office concluded in an evaluation report on transition assistance that while follow-up to assess how ex-military personnel are faring in civilian life is difficult, and that tracking *“long-term outcomes would better position the departments to assess the value of transition assistance as well as determine ways to improve it”* (US General Accounting Office 2002). In Canada, assistance in the transition to civilian employment for Regular Force and full-time Reserve Force personnel releasing from the CF are offered through the Second Career Assistance Network (SCAN) program. This program provides counseling, seminars, and workshops in areas including financial planning, VAC disability pensions and benefits, SISIP benefits, career development and transition, and job search training. Seminars and workshops are administered at varying time points throughout members’ careers. The STCL data could be further analyzed to see it can be used to determine how well transition assistance services have worked for those who participated in VAC and DND/CF programs.

There is some evidence that KSA transfer to civilian jobs is thought to be more difficult for military occupations such as infantry, and easier for others such as health professions or engineering. For example, Scoppio et al (2009) found that only two-thirds of a sample of CF trade workers reported that their current skills were sufficient for civilian work, and that some of the participants felt that military training standards were not at the same level as those of civilian trades. Increasing education about skills transferability may be most critical for individuals in certain occupations for which no clear corresponding civilian job exists.

The significance of the finding that many Veterans reported less prestige, skill/knowledge used, authority, income and importance in their current or most recent job compared to military service remains unclear. Satisfying work life is widely considered to be a contributor to well-being, but national comparators were not available to assess whether STCL Veterans reported more or less of these experiences that might be expected. The finding might be a measure of shift in context from military to civilian cultures. Anecdotally, for example, Veterans have reported feeling disoriented in civilian work cultures when coworkers and supervisors do not have clearly defined ranks and roles as they did in the military. In any case, the finding suggests there is room for improvement.

Further STCL analysis could determine which military occupations are associated with more difficulty transferring KSAs to civilian life, identify subgroups more likely to benefit from career transition programs, and learn more about promoting work life well-being among Veterans after transition to civilian life.

3.4.3 Income

Two STCL income measures are examined in this section: low income and satisfaction with financial situation (Table 22). Overall, Veterans who were less likely to experience low income than the general Canadian population, and most Veterans were satisfied with their financial situation (Table 23). While clients were not more likely than non-

clients to experience low income, NVC clients were by far the least satisfied with their incomes.

The LASS program of research included objective measures of income for this population, reported separately (MacLean et al 2010b).

Low income

Both working and non-working Veterans reported lower rates of low income than the comparable general population. For those who reported working as their main activity, 4% were experiencing low income (household income below the LIM), which is significantly lower than that of the working population in Canada at 9%. For those who did not report working as their main activity, 13% were experiencing low income, which also is significantly lower than that of the working population in Canada at 31%. For both working and non-working populations, the low income rates by client status were not statistically different.

Table 22: Low Income Measure (LIM).

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Low income (below Low Income Measure) - workers	4.2% (2.4-7.3%)	2.6% (1.7-4.2%)	4.9% (3.6-6.6%)	4.3% (3.4-5.6%)
Comparator ^A	7.9% (7.3-8.5%)	7.6% (7.0-8.2%)	9.5% (8.9-10.1%)	9.0% (8.4-9.6%)
Low income (below Low Income Measure) - non workers	11.4% (8.1-15.8%)	11.0% (8.0-14.9%)	13.9% (9.6-19.8%)	12.5% (9.9-15.5%)
Comparator ^A	31.6% (30.7-32.5%)	30.8% (29.9-31.7%)	30.3% (29.4-31.2%)	30.7% (29.8-31.6%)

Notes:

A – Rates are a special tabulation of the Survey of Labour and Income Dynamics (SLID; 2008) indexed to 2009 to match the STCL reported income, age-sex standardized to STCL; 95% CIs are ±0.6% for workers and ±0.9% for non-workers.

Low income was measured using the Statistics Canada before-tax Low Income Measure (LIM) by household size. Low-Income Measures (LIMs) are a relative measure of low income. LIMs are a fixed percentage (50%) of adjusted median family income where adjusted indicates that economies of scales have been taken into account. A family is considered to be low-income when their income is below the Low-Income Measure (LIM) for their family size. For example, the before-tax LIM for a household size of four persons for 2008 was \$42,378 (Statistics Canada Catalogue no. 75F0002M No. 005).

The prevalence of low income among the non-working Veteran and general Canadian population generally is much higher than the working population. The proportions working differed between client status groups and between the general population and Veterans, low income was measured for the working and the non-working. Three-quarters of the total Veteran population reported their main activity over the last year

was working. The proportion working was highest among non clients (81%), followed by DP clients (67%) and NVC clients (49%).

The low income rate of 4% among Veterans working is comparable to the rates found for the pre-release year in the LASS Income Study: Regular Force Veteran Report (MacLean et al, 2010) which studied the same population as the STCL. The Income Study found that in the year prior to release the low income rate was 4%. This rate rose to almost 7% in the year following release and then fell to the pre-release level of 4% in the seventh and eighth years post-release. The Income Study used a record linkage to income tax data while STCL used self-reported income. The fact that the low income rates for a working population were comparable confirms the reliability of the self-reported income.

Satisfaction with Financial Situation

Respondents were asked “How satisfied are you with your financial situation?” and provided these options: “very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied”. Most of the total population (73%) reported they were very satisfied or satisfied with their current financial situation. NVC clients were least satisfied (57%; Table 23). Disability pension clients (72%) reported rates not statistically different from non-clients (76%).

Table 23: Satisfaction with financial situation.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Satisfaction with financial situation (very satisfied, satisfied)	57.1% (53.2-60.9%)	71.8% (69.2-74.4%)	75.6% (73.2-77.9%)	73.2% (71.5-74.9%)

Previous research has found that income is an important determinant of health. Financial satisfaction is related not only to objective measures of income, but also to factors such as education and financial knowledge (Joo and Grable 2004). Also, perception of financial adequacy has been found to be an important predictor of life satisfaction (e.g., Spreitzer and Snyder 1974) and adjustment to civilian life after military retirement (Taylor, Shultz, Spiegel, Morrison, & Green, 2007). These findings suggest the importance of looking not only at objective measures of income, but also at individuals’ perceptions of financial hardship.

The DND/CF *Your Say Survey* periodically examines the quality of life of among serving members. The rate of satisfaction overall with financial situation (73%) was similar to the 2005 rate for the serving Regular Force members. The *Your Say Survey* found that the largest increase in satisfaction among nine life domains (marriage/partnership, relationship with children, yourself, neighbourhood, housing, friendships, health, time and for leisure activities) was due to satisfaction with financial situation, which increased from 54% in 2001 to 74% in 2005 (Pépin et al 2006). This increase was thought to be related to a historically significant pay increase recommended by the Standing Committee on National Defence and Veterans Affairs (SCONDVA, 1998).

NVC clients were much more likely to be medically released than non-clients, and were more likely to have served less than 20 years than DP clients. Analysis of data from a survey of VAC CF clients in 1999 suggested that low satisfaction with financial situation is related to career interruptions, the nature and severity of their disability, and low education (Marshall, Matteo and Mueller 2000, Marshall and Matteo 2004). A U.S. study found that early military retirement (less than 15 years) was associated with slightly lower measures of life satisfaction in general and in particular lower levels of satisfaction with their financial situations than those who retired later (Graves, 2005). The lower satisfaction with financial situation reported by NVC clients might be related in part to expectations of future income that were not realized due to careers being cut short by medical discharge, as well as ongoing chronic health impairment and consequent disability on encountering environmental barriers.

3.5.4 Education

STCL respondents were asked about their highest certificate, diploma or degree completed (Table 24). Of the total population aged 25 to 54, 55% reported they had obtained a post-secondary certificate, diploma, or degree (Table 24). This rate is lower than for the general Canadian population for the same age group (67%; 2006 Census). DP clients (48%) and NVC clients (45%) had lower rates of post-secondary education than non-clients (59%).

Table 24. Post secondary graduation.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Post secondary graduate (age 25-54)	44.5% (40.1-48.7%)	48.1% (44.8-51.3%)	59.0% (55.9-62.0%)	54.9% (52.7-57.1%)
Comparator ^A	66.8% (66.5-67.1%)	66.0% (65.7-66.3%)	67.1% (66.8-67.4%)	66.8% (66.5-67.1%)

Note:

A – Rates are Census 2006 age-sex standardized to STCL; 95% CIs are unadjusted rates of $\pm 0.3\%$ and applied to the adjusted comparator rates.

3.5.5 Stress, Coping, and Social Support

Five indicators of stress, coping and social support were examined for this report: perceived life stress, satisfaction with job or main activity, sense of community belonging, low social support, and mastery (the extent to which individuals believe that their life-chances are under their control) (Table 25). The STCL population did not have as strong a sense of community belonging as the general Canadian population. Less than one-third reported high mastery. However, the majority were satisfied with their job or main activity, most reporting that they had adjusted well to civilian life.

Table 25: Stress, coping, and social support.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Perceived life stress (quite a bit or extremely stressful)	36.7% (33.0-40.5%)	26.8% (24.2-29.3%)	17.2% (15.3-19.4%)	21.2% (19.7-22.8%)
Comparator ^A	26.6% (26.0-27.2%)	26.3% (25.7-26.9%)	24.8% (24.2-25.4%)	25.3% (24.7-25.9%)
Satisfaction with job or main activity	53.5% (49.6-57.4%)	72.1% (69.4-74.6%)	82.9% (80.7-84.8%)	77.8% (76.2-79.3%)
Sense of community belonging (very strong, somewhat strong)	38.7% (35.0-42.6%)	56.1% (53.2-59.0%)	62.3% (59.7-64.9%)	58.9% (56.9-60.8%)
Comparator ^A	63.3% (62.6-63.9%)	64.4% (63.7-65.0%)	61.5% (60.8-62.1%)	62.4% (61.7-63.0%)
Low social support	52.2% (48.3-56.2%)	42.6% (39.8-45.6%)	26.7% (24.3-29.1%)	32.7% (30.9-34.6%)

Notes:

A - Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

Perceived Life Stress

Less than a quarter (21%) reported that most days were quite a bit stressful or extremely stressful, lower than the adjusted rate for the Canadian population (25%; Table 25). NVC clients (37%) and DP clients (27%) both had higher rates of life stress than non-clients (17%), however only the NVC client rate was higher than the general population.

Satisfaction with Job or Main Activity

Most (78%) reported that they were “very satisfied” or “satisfied” with their job or main activity (Table 25). Just over half of NVC clients (54%) reported being satisfied compared to almost three-quarters of DP clients (72%) and the majority of non-clients (83%).

Sense of Community Belonging

Most (59%) reported that their sense of community belonging was very strong or somewhat strong, lower than the adjusted rate for the general population (62%; Table 25). NVC clients reported a very low rate of community belonging (39%) compared to DP clients (56%) and non-clients (62%).

Sense of community belonging is correlated with health. “*Sense of community belonging is highly correlated with physical and mental health, even when age, socio-economic status and other factors are taken into account (Ross 2002, Shields 2008). However, because these studies are cross-sectional, causality cannot be inferred—while weak*

community ties may lead to ill health, illness may also negatively affect sense of community belonging⁷."

Like income, sense of community belonging could be both a determinant and outcome of health. There are a number of theories to explain how social relationships might influence health: health-promoting or health-damaging behaviours may be transmitted among members of a social group; social isolation may be a chronic stressor that accelerates the biological ageing process; or the material and social resources gained from community involvement may provide health benefits (Berkman et al 2000; Berkman and Glass 2000). Conversely, it is well known that health conditions such as depression are associated with feelings of social withdrawal and a sense of social isolation, which in turn can affect social connectedness.

High sense of community belonging has been related to a number of demographic factors, including older age, higher income, and living in a rural area, although the direction of causality in these relationships remains unclear (Ross 2002, Shields 2008). In the military environment, cohesive relationships are important, and sense of community may be enhanced by shared experiences such as deployment. For example, studies of military personnel have indicated that group cohesion is an important factor in protecting against psychiatric casualties among military personnel (Weaver and Stewart 1988), and cohesion is considered important for combat effectiveness, performance and morale (Henderson 1985; MacCoun 1993). Community belonging may be even more important once members leave the military, since they are leaving this social network behind.

Sense of community belonging in military Veterans is less well understood. The military service context of post-release health and disability often is mentioned anecdotally by Veterans and health care providers, for example loss of the "military family" (e.g. Pranger et al 2009). It is also possible that sense of community belonging might be lower for those just released, and improves over time after release. Sense of community belonging in Veterans could be explored in the more general context of Veteran self-identity, which is hypothesized anecdotally to be both an outcome and determinant of health and disability and remains largely unexplored in research. Further analysis of the STCL data would shed further light on the connection between sense of community belonging and the needs of Veterans.

Social Support

A social support scale was derived from nineteen STCL questions. The scale ranged 19-95, a higher score indicating greater social support. The cutoff for low social support was ≤ 74 (Schopflocher, 2002). A third (33%) reported low social support. Clients were much more likely than non-clients to have low social support (Table 25). Over half of NVC clients (52%) and nearly half of DP clients (43%) had low social support, compared to just over one-quarter of non-clients (27%).

⁷ Community Belonging. <http://www.statcan.gc.ca/pub/82-229-x/2009001/envir/cob-eng.htm> viewed 22 October 2010.

While the same social support questions were asked on the 2007-08 CCHS for regions in NS, Quebec, BC, Nunavut and the Yukon, the data is not included in the Public Use Microdata. Using CCHS 2001 data from nearly a decade earlier than STCL, a study of low social support using the same indicator reported the rate of low social support reported by Canadians aged 12 years and older was 19.9% (95% CI 19.6-20.2%) (PEI 2004). This rate is not directly comparable to the STCL rate of 33% because it is not adjusted for age and sex, and owing to the decade difference.

Research into social support and physical health has produced inconsistent findings, probably owing not to lack of effect, but to complexity of the research required to study the question (Schwarzer and Leppin 1991, Eaker 2005). There are now several published examples of how social support can affect mental and physical health (eg, Hoogendoorn et al 2000, Berkman and Glass 2000, Berkman et al 2000). Like income, social support is an important determinant of health, and an important facilitator in overcoming barriers causing disability in persons with health conditions. A person's social health and therefore integrity of their social supports can also be determined by health: the relationship is two-way. In analysis of the 1994/5 National Population Health Survey, Stephens et al (2002) found that persons reporting high levels of social support had only half the odds of being affected by stress, and social support was second in available variables only to current stress in its importance for mental health.

Further analysis of the data would yield more insights into the role of social support in health and disability of the STCL population, for example in assessing the effects of remembrance and commemoration on the health of Veterans and their families.

Mastery

Mastery is the extent to which people view themselves as being in control of factors that affect their lives (Pearlin et al 1981). Respondents rated their extent of agreement with seven items reflecting level of mastery (control over things that happen to them) on a 5-point scale. Total scores ranged from 0 to 28, with higher scores indicating higher levels of perceived control. Individuals scoring ≤ 7 were considered to have extremely low levels of this personal resource, an approach used in the CF Recruit Health Questionnaire (Lee et al 2010). Stephens et al (2005) defined high mastery as a score ≥ 23 in analyzing the 1997-98 Canadian National Population Health Survey.

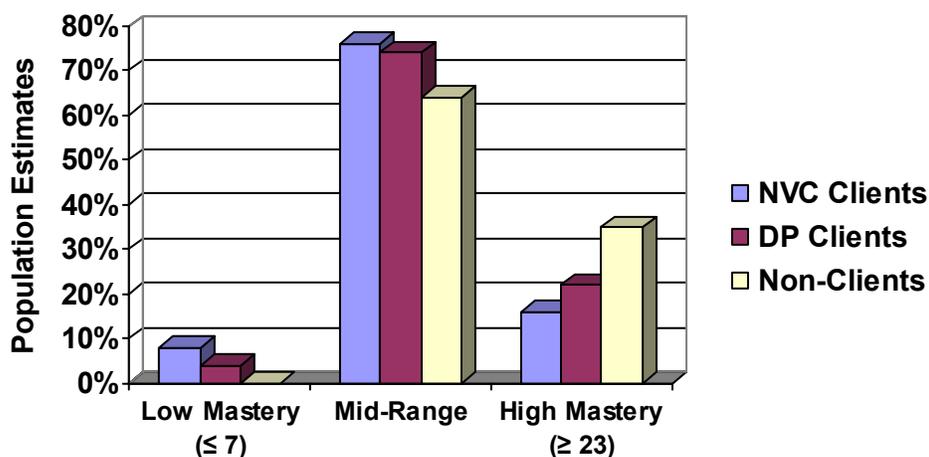
About 30% of the population reported high mastery (Table 26). Non-clients reported the highest rate (35%), followed by DP clients (22%) and NVC clients (16%). No direct national comparator was found. In the 1994-95 National Population Health Survey (NHS), high mastery rates ranged 19-26 over the five 10-year age groups from 20 to 69 years of age (Stephens et al 2000). Most of each group had mid-range mastery scores (Figure 8).

Table 26. Mastery.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Low mastery	8.4% (6.4-10.7%)	3.5% (2.51-4.66%)	x	2.1% (1.65-2.54%)
High mastery	16.2% (13.6-19.3%)	21.7% (19.4-24.2%)	35.4% (32.9-38.0%)	30.4% (28.6-32.3%)

Note: x – Unreliable rate, sample size < 30.

Figure 8: Mastery rates by STCL group.



Mastery is associated with resiliency when undergoing stressful events, so could be an important personal resource that might promote better physical, mental and social health. Individuals vary in their enduring patterns of reactions and beliefs that affect the way experiences are perceived and dealt with (Folkman et al 1986). Mastery is thought to be one of the personal characteristics that can reduce the adverse impacts of stress by reducing feelings of vulnerability to otherwise threatening events, or by acting as a self-fulfilling prophecy (Pearlin et al 1981). Such characteristics can act as resources for a person facing stressful events, affecting resiliency or vulnerability to potentially adverse outcomes of stressors (e.g., Kobasa 1979). Importantly, perceived control is associated with better self-perceived health status (Ben-Zur 2002) and health outcomes (Walker 2001). Mastery is associated with adaptive coping styles when dealing with stressors (Lazarus & Folkman, 1984).

The relationship between mastery and other STCL indicators deserves further study. Stephens et al (2000) found that high mastery was associated with higher education, greater social support, and less childhood trauma and current life stress. They reported others had found that a greater sense of mastery was associated with greater life satisfaction and less depression. Potential connections between mastery and physical health do not appear to have been well studied.

3.5.6 Adjustment to Civilian Life

STCL respondents were asked: “*In general, how has the adjustment to civilian life been since you were released from the Canadian Forces?*” and offered these choices: “*Very difficult, moderately difficult, neither difficult nor easy, moderately easy, very easy*”. This question was adapted from a U.S. study on retirement satisfaction and adjustment among retired naval officers (Spiegel and Shultz, 2003).

The majority (62%) reported easy (very easy or moderately easy) adjustment to civilian life. However, the easy adjustment rate differed considerably among STCL groups: just over one-quarter (28%) of NVC clients reported easy adjustment compared to half of DP clients (50%; Table 27) and the majority of non-clients (71%; Table 28). Moderately or very difficult adjustment to civilian life was reported by a quarter (25%) of the STCL population, 17% of non-clients, 37% of DP clients and 57% of NVC clients.

Table 27: Adjustment to civilian life.

Indicator	NVC Clients	DP Clients	Non-Clients	Total
Adjustment to civilian life (moderately easy, very easy)	28.3% (24.9-31.8%)	49.6% (46.6-52.4%)	70.5% (67.9-72.8%)	61.8% (59.9-63.5%)
Adjustment to civilian life (neither difficult nor easy)	14.3% (11.8-17.2%)	13.2% (11.3-15.3%)	12.6% (10.9-14.5%)	12.9% (11.6-14.2%)
Adjustment to civilian life (moderately difficult, very difficult)	57.4% (53.5-61.2%)	37.3% (34.5-40.1%)	16.9% (15.0-19.1%)	25.3% (23.8-26.9%)

The few who released at age 19 or younger had the highest rate of easier adjustment (83%) followed by senior officers (79%), then those who enrolled in the 1960s (77%; Table 28). The lowest rate of easier adjustment was reported by those released for medical reasons (36%), followed by those who reported they were widowed, separated or divorced (43%), those released as junior NCMs (48%) and those released with 10 to 19 years of service (48%).

The much lower rates of easy adjustment and higher rates of difficult adjustment among clients compared to non-clients could be explained by confounders such as differences in the proportion of medically released and junior NCM ranks, both of which reported low rates of easier adjustment. Clients were much more likely than non-clients to have been medically released and to be released at the junior NCM ranks. Some non-clients reported difficulty adjusting, which could indicate some program reach issues.

Those with shorter lengths of service (< 10 years) or longer service (≥ 20 years) had higher rates of easy adjustment than those who transitioned in the middle of their military careers. Many younger respondents with shorter service and voluntary release to pursue for alternative opportunities might be less likely to encounter adjustment difficulties. Many who released at older ages likely would have planned for voluntary retirement, a factor that Spiegel and Schultz (2003) reported was associated with a satisfying adjustment to civilian life.

Table 28: Easy adjustment to civilian life by social and service characteristics.

Variable	Category	Rate % (95% Confidence Interval)			
		NVC Clients	DP Clients	Non-Clients	Veterans
Group Totals		28.3 (24.9-31.8)	49.6 (46.6-52.4)	70.5 (67.9-72.8)	61.8 (59.9-63.5)
Age groups by age at release from service	≤ 19 Years	0	0	83.4 (72.4, 90.6)	82.8 (71.9, 90.1)
	20-29	x	x	66.6 (61.7, 71.2)	63.2 (58.7, 67.4)
	30-39	x	37.1 (31.6, 42.9)	67.0 (61.2, 72.4)	53.1 (49.1, 57.0)
	40-49	32.3 (27.3, 37.6)	51.4 (47.4, 55.4)	70.8 (66.3, 75.0)	59.4 (56.6, 62.2)
	50-59	51.7 (41.1, 62.3)	65.6 (58.9, 71.8)	78.9 (72.8, 84.0)	72.9 (68.6, 76.8)
	60-69	x	x	x	x
Sex	Female	x	42.4 (34.0-51.3)	62.9 (55.4-69.9)	54.7 (49.1-60.1)
	Male	29.4 (25.8-33.3)	50.4 (47.4-53.5)	71.5 (68.8-74.1)	62.8 (60.8-64.7)
Marital status time of survey	Married/Commonlaw	31.2 (27.2, 35.5)	51.1 (47.9, 54.3)	72.4 (69.5, 75.1)	63.3 (61.2, 65.3)
	Widowed/Separated/ Divorced	x	42.0 (34.3, 50.2)	48.6 (38.9, 58.4)	42.8 (37.0, 48.9)
	Single/Never married	x	44.6 (33.1, 56.7)	71.5 (65.3, 76.9)	65.9 (60.5, 70.9)
Length of Service	< 10 years	x	40.5 (30.9-50.8)	67.4 (63.2-71.4)	63.2 (59.4-66.8)
	10 to 19 years	x	32.7 (26.7-39.3)	69.3 (61.1-76.4)	48.2 (43.2-53.2)
	≥ 20 years	39.5 (34.7-44.5)	55.1 (51.8-58.5)	73.8 (70.4-76.9)	64.3(62.1-66.5)
Release Type^B	Involuntary	x	x	56.7 (44.8-67.8)	51.9 (41.5-62.1)
	Medical	16.7 (13.3-20.9)	39.0 (35.3-42.9)	42.3 (33.7-51.3)	35.6 (32.5-38.8)
	Voluntary	46.3 (39.2-53.6)	62.1 (56.8-67.1)	74.4 (71.4-77.1)	71.6 (69.1-74.0)
	Retirement Age	x	68.7 (57.9-77.7)	77.4 (69.0-84.0)	74.9 (68.5-80.4)
	Service Complete	46.4 (30.5-63.0)	62.8 (52.2-72.4)	70.3 (60.7-78.4)	66.9 (59.9-73.3)
Release Year	1998-99	x	45.7 (38.4, 53.2)	70.0 (64.3, 75.2)	63.4 (58.9, 67.8)
	2000-01	x	53.4 (46.2, 60.4)	74.3 (68.6, 79.3)	66.9 (62.4, 71.0)
	2002-03	x	46.2 (39.9, 52.5)	70.8 (64.7, 76.2)	61.6 (57.2, 65.9)
	2004-05	x	46.4 (41.1, 51.8)	68.7 (62.3, 74.5)	56.8 (52.7, 60.9)
	2006-07	31.3 (26.5, 36.6)	57.8 (51.1, 64.3)	69.2 (63.9, 73.9)	61.4 (57.6, 64.9)
Deployment	Yes	28.5 (24.8-32.5)	49.2 (46.0-52.3)	68.1 (64.7-71.4)	57.7 (55.5-59.9)
	No	28.4 (20.7-37.7)	51.7 (43.8-59.5)	73.9 (70.0-77.4)	69.9 (66.5-73.1)
Rank^B	Senior Officers	x	71.6 (60.5-80.5)	80.2 (72.8-86.0)	78.5 (72.6-83.4)
	Junior Officers	x	58.5 (45.2-70.7)	79.5 (71.6-85.6)	73.8 (67.3-79.5)
	Cadets	x	x	77.2 (66.5-85.2)	75.4 (65.2-83.5)
	Senior NCM	38.2 (31.9-45.0)	53.3 (48.8-57.8)	73.0 (68.2-77.4)	62.8 (59.6-65.8)
	Junior NCM	19.2 (15.3-23.9)	42.8 (38.6-47.2)	60.4 (54.8-65.9)	48.4 (45.1-51.7)
	Privates	x	x	62.9 (53.1-71.8)	60.4 (51.4-68.8)
	Recruits	x	x	71.2 (65.0-76.6)	68.4 (62.6-73.6)
Education at time of survey	Less than high school	x	48.7(39.1, 58.3)	65.3 (54.2, 74.9)	56.3 (49.2, 63.2)
	High school	28.5 (23.7, 33.8)	52.9 (48.5, 57.2)	70.4 (66.3, 74.3)	61.7 (58.8, 64.5)
	Post-secondary	28.4 (23.5, 33.9)	46.5 (42.3, 50.7)	71.0 (67.6, 74.2)	62.5 (59.9, 65.1)
Service Branch	Air Force	34.0 (27.5-41.1)	55.4 (50.1-60.5)	72.9 (68.6-76.9)	65.8 (62.5-68.8)
	Army	25.0 (20.8-29.7)	45.5 (41.6-49.4)	67.6 (63.6-71.3)	57.2 (54.5-59.9)
	Navy	30.3 (21.8-40.5)	50.5 (42.4-58.6)	71.1 (64.9-76.6)	64.0 (59.2-68.6)
Enrolment Decade	1960s	x	70.3 (60.7-78.4)	82.0 (74.2-87.9)	77.1 (71.4-82.0)
	1970s	45.9 (38.1-53.8)	53.3 (48.4-58.1)	73.8 (68.7-78.3)	64.4 (61.0-67.7)
	1980s	26.5 (21.7-31.8)	46.0 (41.7-50.3)	69.1 (64.2-73.7)	55.7 (52.6-58.8)
	1990s	x	38.5 (29.3-48.6)	63.9 (56.8-70.4)	55.0 (49.4-60.4)
	2000s	x	x	70.1 (65.1-74.7)	66.9 (62.2-71.2)

Notes:

x – Unreliable data, sample size < 30.

A – Excluded unknown category.

B – See Table 1.

Although those who were separated or divorced more often reported difficulty adjusting to civilian life, given the study's cross-sectional design it is difficult to determine the direction of causality related to marital status: whether being separated or divorced at the time of release contributed to adjustment difficulty or whether adjustment difficulty caused marital breakdown. This is true for other variables and potential confounders. Further analysis will be undertaken to better understand the adjustment to life findings and factors that might explain them.

3.5.7 Gender: Women

Women comprised 12% of the STCL population, the proportion varying little among the three subgroups (11–12%; Table 1). Although only very limited analysis of the STCL data has been conducted, the findings indicate there are differences that warrant further attention. For example, women were less likely than men to report easy adjustment to civilian life. It is not clear yet why this was so, and possibilities at this point are many, including methodological artifact, differences in perception of the question, and unidentified factors causing relatively more women to experience difficulties in transition to civilian life. Women more often reported suicidal ideation. The SF-12 scores were lower for women, although the significance of this is unclear.

The small sample sizes of women hamper analysis. The rate found in this study is consistent with other research. Park (2008) found that by 2002, 15% of all CF personnel were women, up from 2% in 1972 and 10% in 1988. The proportion in the Regular Force (12%) was lower than in the Reserve Force (21%). In the U.S., 14% of active military personnel are women (Yano et al 2010).

Women have unique roles in families and communities, and unique physical and mental health issues. Although there is clear evidence in research literature that there are unique dimensions of physical, mental and social health, disability and access to determinants of health for women Veterans, the evidence base remains limited (Yano et al 2010, Zinzow et al 2007, Frayne et al 2006 & 2007, Goldzweig et al 2006, bond 2004, Stern et al 2000, Street et al 2009, Vogt et al 2005, Vogt et al 2008, Rosen et al 1999, Sudom, 2008, Singh and Murdoch 2007, Holbrook and Hoyt 2004, Schnurr and Lunney 2008). Compared to men, differences documented in the literature include higher rates of harassment, sexual abuse, unwanted or unexpected pregnancy, miscarriage or infertility, and psychological reactions to military stressors. Much less is known about physical, mental and social health effects of military service on female Veterans and their families throughout the later life course.

Further research on women CF Veterans is needed to better understand sex differences in this population. Secondary analysis of the STCL findings will provide some insights, and further population health studies of Veterans should oversample for women.

3.5.8 Health Care Accessibility

STCL used several indicators of health care accessibility (MacLean et al 2010), of which four are discussed here: prescription drugs insurance, dental insurance, eye glasses insurance and having a regular medical doctor (Table 29).

Table 29: Health care accessibility.

Indicator	NVC Clients	DP Clients	Non-clients	Total
Prescription Drug Insurance	95.0% (92.9-96.4%)	97.8% (96.7-98.5%)	89.4% (87.5-91.0%)	92.0% (90.7-93.1%)
Dental Insurance	87.5% (84.7-89.9%)	93.8% (92.2-95.1%)	84.2% (82.0-86.2%)	87.0% (85.5-88.3%)
Eye Glasses Insurance	88.8% (86.0-91.1%)	91.9% (90.1-93.4%)	81.0% (78.6-83.1%)	84.4% (82.8-85.9%)
Regular Medical Doctor	88.6% (85.9-90.9%)	89.3% (87.4-91.0%)	78.4% (76.0-80.6%)	82.0% (80.3-83.5%)
Comparator ^A	80.9% (80.5-81.4%)	83.2% (82.8-83.7%)	78.0% (77.6-78.5%)	79.6% (79.2-80.1%)

Notes:

A - Rates are CCHS 2007-08 age-sex standardized to STCL; 95% CIs are unadjusted rates as published in CANSIM and applied to the adjusted comparator rates.

Health Insurance

The majority reported having insurance for prescription drugs (92%), dental care (87%) and eye glasses (84%; Table 29). Almost all VAC clients reported insurance for prescription drugs (NVC 95% and DP 98%).

The STCL subgroups all had high coverage rates, particularly those receiving benefits from VAC ($\geq 95\%$). Insurance coverage for prescription medications is a complex mix of public (provincial and federal) and private plans in Canada (Fraser Group 2000). Based on CCHS 2002 data, use of prescription medications is related to access to insurance coverage (Sarma et al 2007).

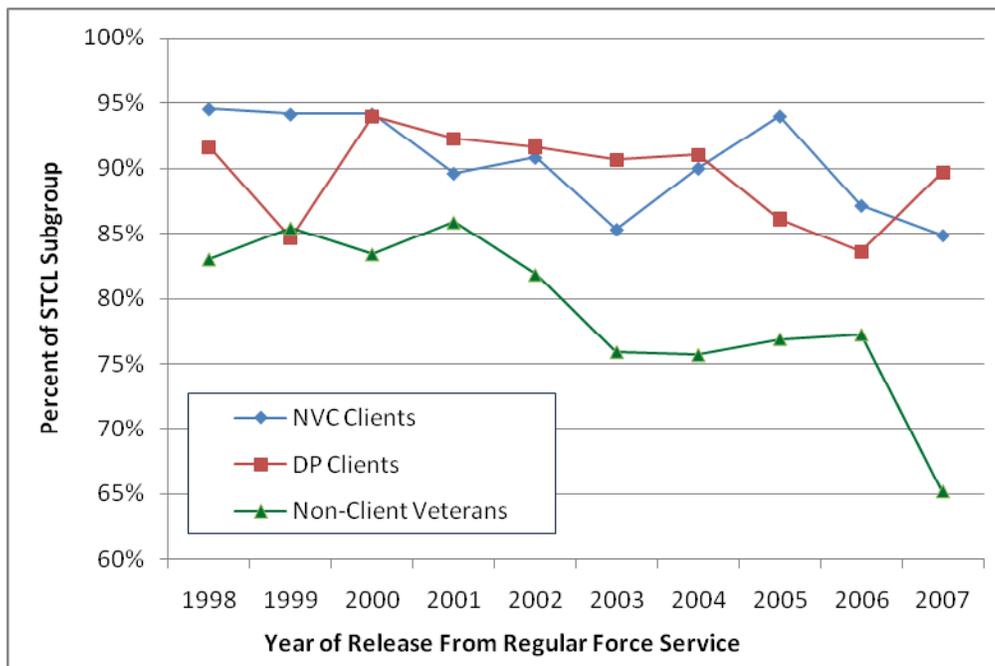
Although adjusted CCHS 2007-08 rates were not available to compare with the STCL insurance coverage questions, Miller (1999) reported that, based on the 1996-7 Statistics Canada National Population Health Survey (NPHS), 61% of Canadians aged 15 and older reported prescription medication coverage, and the coverage rates were lower among those with lower income (38%) than those in the highest income group (74%). It remains to be determined whether access to both group health plans and VAC programs explains the higher rate of coverage among VAC clients.

Regular Medical Doctor

For many Canadians, the first point of contact for medical care is their doctor, and family physicians and general practitioners play key roles in health care teams, virtual or co-located. The majority reported having a regular medical doctor (82%), slightly higher than the adjusted rate for the general population (80%; Table 29). The rate for non-clients (78%) was the same as the adjusted rate for the general population, but both VAC client groups reported higher rates (89%) than the general population.

CF personnel receive health care through CF Health Services while in service but find their own family physician or general practitioner after leaving service. Non-clients who released during 1998-2007 were more likely to have a regular medical doctor the longer they had been out of service (Figure 9). However the two VAC client groups were more likely than non-clients to report having a regular physician regardless of when they released in that decade. Some of this difference between clients and non-clients could be due to age, since the non-client group was relatively younger and healthier, and therefore might perceive less need to seek a regular physician.

Figure 9: Proportion reporting a regular medical doctor, by year of release



In an analysis of CCHS 2.1 2003, Thompson et al (2008) also found that Veterans were more likely than the Canadian general population to have reported contact with a medical doctor in the prior 12 months: World War II/Korean War Veterans 91% vs 90%, CF Regular Force Veterans 84% vs 79%, and CF Reserve Force Veterans 82% vs 78%.

Both client groups reported higher rates of health and disability issues than non-clients and the general Canadian population. The higher rates of having a regular medical doctor reflect the fact that persons with chronic health issues are more likely to seek a regular physician (CIHI 2009).

Although CIHI (2009) reported that 1 in 6 Canadians aged 15 and older reported difficulty accessing routine or ongoing health care or getting information or advice, the majority of had insurance for prescription drugs, dental care and eye glasses, and had a regular physician. On average, clients were more likely to have insurance and a regular medical doctor than non-clients. The STCL findings have implications for Veterans'

health care. Further analysis of the STCL data would provide additional insights to health care access issues.

3.6 Summary Comparison to the Canadian General Population

Table 30 gives an overview of STCL findings⁸. The STCL population was better off than the Canadian general population for life stress, smoking, income and having a regular physician. The population was comparable to the general Canadian population for a variety of indicators of health and access to determinants of health. On the other hand, the population was worse off for general health (well-being; perceived health and mental health) and satisfaction with life; some chronic health conditions (arthritis, back problems, obesity and anxiety disorders), disability (participation and activity limitation), post-secondary graduation, and sense of community belonging.

⁸ The following inspection method was used to detect statistically significant differences for Table:

- The assumption was made that the unadjusted CI's for the comparator rates did not differ significantly from CIs for adjusted rates (see Methods section).
- "Worse" health, more disability or decreased access to determinant of health than the comparator was assigned to STCL rates that differed from the comparator in an adverse direction, and the confidence intervals did not overlap.
- "Equal" health, disability or access to determinant of health was assigned to STCL rates that did not differ from the comparator, meaning the confidence intervals overlapped.
- "Better" health, less disability or decreased access to determinant of health was assigned to STCL rates that differed from the comparator in a direction favouring the STCL group, and the confidence intervals did not overlap.
- Comparisons were not done when sample sizes were less than 30 respondents, owing to statistical unreliability of the rate estimate.

Table 30: Summary chart of STCL results that can be compared to general Canadian population.

Core Concept	Indicator Group	Indicator	NVC Clients	DP Clients	Non-clients	Whole Group
Health	General Health	Perceived health, very good or excellent ^A	▼	▼	▲	▼
		Perceived mental health - very good or excellent ^A	▼	▼	=	▼
		Satisfaction with life (satisfied or very satisfied) ^A	▼	▼	=	▼
	Chronic Conditions	Asthma ^A	=	=	▲	=
		Arthritis ^A	▼	▼	▼	▼
		Back problems ^B	▼	▼	▼	▼
		High blood pressure ^A	▼	▼	=	▼
		Diabetes ^A	▼	=	=	=
		Heart Disease ^B	▼	▼	=	=
		Cancer ^B	x	x	x	=
		Stroke ^B	x	x	x	=
		Bowel disorders ^B	▼	▼	=	▼
		COPD ^A	▼	=	x	=
		Overweight ^A	=	=	=	=
		Obese ^A	▼	▼	▼	▼
Anxiety disorder ^B	▼	▼	=	▼		
Disability		Participation and activity limitation (sometimes or often) ^A	▼	▼	▼	▼
Determinants of Health	Health Behaviour	Current smoker, daily ^A	=	=	▲	▲
		Current smoker, daily or occasional ^A	=	▲	▲	▲
		Heavy drinker (5 or more drinks on one occasion, 12 or more times a year) ^A	=	=	=	=
	Employment	Unemployment Rate ^C	▼	=	=	=
	Income	Low income (below Low Income Measure) – Workers ^D	=	▲	▲	▲
		Low income (below Low Income Measure) – Non-workers ^D	▲	▲	▲	▲
	Education	Post secondary graduate (age 25-54) ^E	▼	▼	▼	▼
	Stress & Coping	Perceived life stress (quite a bit or extremely stressful) ^A	▼	=	▲	▲
		Sense of community belonging (very strong or somewhat strong) ^A	▼	▼	=	▼
	Accessibility	Regular medical doctor ^A	▲	▲	=	▲

A. – Applied published (CANSIM) CCHS confidence interval for non-standardized estimates.

B. – Published (CANSIM) CCHS confidence interval not available, so applied highest CCHS 2007-08 CI for STCL indicators (perceived health, overweight and sense of community belonging CI ± 0.7%).

C. – Applied CI ±0.5% for the unemployment rate from the Labour Force Survey August 2010.

D. – CI ± 0.6% for workers; ± 0.9% for non-workers for LIM indicator from Survey of Labour and Income Dynamics 2008.

E. – Applied Census 2006 estimate CI ±0.3%.

x – Unreliable rate, since sample size < 30.

4. Discussion

STCL was conducted to determine the health, disability, and determinants of health status for CF Regular Force Veterans after release from service. The survey yielded unprecedented, nationally representative data for Veterans who released from service during 1998-2007. STCL is the first comprehensive health survey of Canadian Regular Force Veterans who were not VAC clients. The survey included Veterans receiving benefits from VAC under the older Pension Act, and the first of those receiving benefits under the New Veterans Charter of 2006. This descriptive report gives a basic picture of the status of the STCL population soon after transition. The report provides a basis for both informing VAC and DND/CF programs and further analysis of the STCL data to better understand the health and needs of CF Veterans when they re-establish in civilian life after service.

Almost two-thirds (62%) of CF Regular Force Veterans who released from service during 1998-2007 reported an easy adjustment to civilian life, and a quarter (25%) reported a difficult adjustment to civilian life. Non-clients were less likely to report a difficult adjustment (17%). More VAC clients had a difficult adjustment (DP clients 37%, NVC clients 57%), indicating that many who experienced re-establishment difficulties had sought assistance from VAC.

CF Regular Force Veterans who released from service during 1998-2007 had worse health, disability and determinants of health status than the general Canadian population. Many who had problems with health, disability, and determinants of health were already receiving benefits from VAC. VAC clients had worse health, disability and determinants of health status than the general population, which is not unexpected because Veterans seek assistance from VAC with health problems. The majority who had chronic health conditions diagnosed by a health professional attributed their condition to military service, as did many with disability.

Programs meeting the needs of Veterans should be capable of dealing with complex physical, mental and social health issues. Physical health problems were common in all three subgroups of the STCL population, including over 90% of the VAC client groups. In the 1999 VAC survey of CF post Korean War clients, about 55% reported back problems and 48% reported arthritis, but the list of other chronic physical health conditions was long and varied (Asmundson 2000). As in STCL, musculoskeletal and mental health disorders were prominent, and comorbid combinations of physical and mental conditions were common. STCL asked about a small range of physical health conditions, but both the 1990s and STCL surveys provided a very similar picture of health complexity in CF personnel who receive benefits from VAC.

STCL findings suggest program reach issues and unmet need for VAC services among the two-thirds (66%) of the Veterans surveyed in STCL were not receiving benefits from VAC. This was a very heterogeneous group, and further study is necessary to better understand their contribution to the health status of the overall STCL population. The non-client group's age profile was bimodal, with peaks among both young adulthood and

middle ages. Nearly half of non-clients (45%) had less than 10 years of service, while nearly half (45%) had greater than 20 years. Nearly half (45%) had not deployed, but more than half had (55%). Many non-clients released after long careers, however a quarter (27%) released as recruits and officer/naval cadets, presumably after very short terms of service, and it cannot be assumed that all were young and healthy. A small but significant proportion of non-clients reported difficult adjustment to civilian life (17%), and some reported chronic physical and mental health conditions they attributed to military service. This suggests that some non-clients have unmet needs.

It cannot be assumed that the STCL findings are the result of military service or VAC programs. The primary objective of the survey was to measure post-transition health status at a point in time. STCL was a cross-sectional survey, so the findings provide a snapshot of the early post-transition health status of CF Regular Force personnel who released in 1998-2007. The STCL population was very heterogeneous, including Veterans who were young and middle-aged, released as recruits and cadets as well as with many years of service, had never deployed or deployed many times, and had a broad mix of other service and sociodemographic characteristics. For these reasons, the findings cannot be used to prove a cause-and-effect relationship between military service or VAC programs and health after release from service.

4.1 Strengths

- STCL provided the first comprehensive picture of the post-release health, disability and determinants of health of a 10-year group of Regular Force CF personnel who recently transitioned to civilian life.
- The survey was nationally representative of CF Regular Forces Veterans who released in 1998-2007.
- The survey included Veterans living in the general Canadian population who were not receiving benefits from VAC, as well as those who were.
- Veterans were identified objectively through data linkage with DND release data, not by self-reporting.
- VAC clients were in the minority, but the survey's stratified design allowed for oversampling VAC clients.
- The survey questionnaire was designed within a broad population health framework encompassing health, disability, determinants of health and the life course perspective.
- Survey questions allow for comparisons with other surveys.
- The release period straddled both the older *Pension Act* and the 2006 *CFMVRCA* (*Canadian Forces Members and Veterans Re-establishment and Compensation Act*; *New Veterans Charter*).

4.2 Limitations

- Since STCL was a point-in-time cross-sectional survey, the findings do not allow for finding causality, and provide limited opportunities to study changes in health,

disability and access to determinants of health over the life course of former CF personnel.

- The study population was assembled for one decade of releases (1998-2007), therefore STCL findings cannot be generalized to all CF Veterans.
- The survey included only former CF Regular Force personnel. Reserve Force personnel could not be included because electronic records for Reserve Force personnel were incomplete at the time the study was initiated (MacLean et al 2010a).
- Owing to small sample sizes of women, the survey had insufficient power to study several aspects of women Veterans' health.
- Self-reported health status is not as strong evidence as objective clinical measures (IOM 2010). Clinical records and assessments by a health professional are stronger evidence for the presence and absence of chronic health conditions. Measures of mental health such as the World Mental Health-Composite International Diagnostic Interview (WMH-CIDI) provide a higher level of evidence for mental health conditions in surveys than self-report (Mawani et al 2010).
- Not all questions used in STCL were fully validated.

4.3 Further Research

The real power of this type of population health survey lies in secondary analyses that can be undertaken to discover associations between variables, and better identify subpopulations with particular needs. This report describes only about half the variables collected in STCL (MacLean 2010a). The STCL database is a rich and largely untapped source of information on the health, disabilities and determinants of health for CF Regular Force Veterans who released in 1998-2007.

It is not clear from this cross-sectional, point-in-time survey why the STCL population was worse off than the general population for some indicators. Similarly, it is not clear why the NVC client population was worse off than the DP clients. A number of hypotheses could be explored. For example, compared to DP clients, NVC clients tended to have been younger, lower rank and more recently released from service, so perhaps had fewer resources for re-establishing in civilian life and less time to benefit from VAC programs. They might have been more likely to have deployed to Afghanistan, although it is not yet clear whether Afghanistan service would have had a different impact on health and disability than earlier deployments. A fifth (19%) released as recruits and officer/naval cadets, and it cannot be assumed that this group's health status was better than average. Further analysis of the STCL datasets using more rigorous statistical methods controlling for confounders and linking to service history would test these hypotheses.

Further analyses of the STCL data would provide insights into a variety of questions about the population health of Canadian Veterans. Some examples include:

- Validate and better understand the findings described in this report.
- Data linkages with VAC and DND administrative data to better understand the post-transition, re-establishment experience of the STCL population, for example:

- To better understand why the NVC client group had worse status of health, disability and determinants of health than DP clients.
- Comparisons of self-reported data to objective correlates in VAC, DND and Statistics Canada databases would test the validity of self-reporting.
- Analyze the STCL data to learn more about subpopulations:
 - Identification of vulnerable subgroups within the STCL population, to inform screening methods for identifying personnel and Veterans most likely to need assistance with re-establishment civilian life, and to identify groups not reached by VAC programs.
 - More can be learned about challenges facing Veterans with chronic physical and mental health conditions as they attempt to function optimally in work, social and family life.
 - A significant proportion of Canadians live in rural and remote communities. Further analysis of STCL data using linked geographic information would compare the status of health, disability and determinants of health for Veterans living in rural versus urban Canada. Wallace and Weeks (2006) and Weeks et al (2004) found differences in the health-related quality of life between urban- and rural-dwelling Veterans in the U.S. In Canada, Shields (2008) found a marked correlation between degree of rurality and sense of community belonging. Romans et al (2010) found lower depression rates and higher rates of community belonging in rural Canadians. Rural and remote Canadians have geographic barriers to accessing specialized urban health care.
- Further analysis of the STCL data could identify priorities for health promotion while in service, to enhance mitigation of health and disability problems later in the life course, after leaving service.
- Analyze the STCL data and data linkages to develop better transition, re-establishment and population health indicators for Veterans:
 - The STCL and the LASS Income Study (MacLean et al 2010b) data can be used to develop and test an aggregate outcome measure for “doing well” after transition to civilian life. Little has been published on methods for measuring how well former military personnel are doing after transition to civilian life (Sweet and Thompson 2009). For example, Ramage-Morin et al (2010) combined CCHS 2009 indicators to derive an outcome variable called “good health” in their study of health promotion among mid- to later life for Canadians in the general population.
 - STCL data can be used to validate indicators used in the study, such as the adjustment to civilian life and service attribution questions.
 - Issues of Veteran identity, commemoration and recognition of Veterans’ service could be explored using the STCL data, perhaps by looking at combinations of social support, mastery and other variables. In analysis of the Canadian National Population Health Survey data, Stephens et al (2000) found that social support was second only to current stress in its importance for mental health, and played a role in resilience to stress.

- Further surveys should ensure sufficient sampling power to understand the health status of women Veterans.

Future LASS studies need to consider a longitudinal design to overcome the limitations of point-in-time cross-sectional studies like STCL. VAC and DND/CF need ongoing information to support evidence-informed programs and policy that account for the life course dynamics of Veterans. STCL will inform future LASS studies by defining topics of further study, and identifying sub-populations of interest such as women in service and vulnerable groups who are not receiving benefits from VAC.

5. Summary

This report describes the health, disability and determinants of health of CF Regular Force Veterans after transition when they released from service in 1998-2007. The Survey on Transition to Civilian Life was the first comprehensive health survey of both those receiving benefits from VAC and those who were not.

Two-thirds (62%) of all CF Regular Force Veterans who released from service in 1998-2007 and 71% of those who were not receiving benefits from VAC had an easy adjustment to civilian life. As would be expected, significantly fewer VAC clients (DP clients 50% and NVC clients 28%) had easy adjustment, indicating that many who experienced re-establishment difficulties were already receiving benefits from VAC.

The findings suggest unmet needs and program reach issues. Non-clients were a very heterogeneous group that included 17% with a difficult adjustment to civilian life, and some with chronic physical and mental health conditions they attributed to military service. This suggests that some non-clients have unmet needs.

The findings suggest that VAC programs and services should be capable of assisting those with complex states of health. This complexity is demonstrated by the number, variety and comorbidity of physical, mental and social conditions reported by those receiving benefits from VAC.

STCL was a cross-sectional survey, so the findings provide a point-in-time snapshot of post-transition health status of CF Regular Force personnel who released in 1998-2007. The survey yields little information about Veterans' life courses, and the findings cannot be used to prove a cause-and-effect relationship between military service and health after release from service, or outcomes of VAC programs.

Future LASS studies need to consider a longitudinal design to overcome the limitations of cross-sectional studies like STCL. VAC and DND/CF need ongoing information to support evidence-informed programs and policy that account for the life course dynamics of Veterans. STCL will inform future LASS studies by defining topics of further study, and identifying sub-populations of interest such as women in service and vulnerable groups who are not receiving benefits from VAC.

STCL findings provide a basis for informing VAC and DND/CF programs and services. Additional analyses will inform DND/CF health protection initiatives that mitigate health and disability problems among serving personnel after they leave service. Both departments will evaluate the results of the survey to meet the needs of Veterans throughout their life courses.

References

Abel SM. Hearing loss in military aviation and other trades: Investigation of prevalence and risk factors. *Aviat Space Environ Med.* 2005 Dec;76(12):1128-35.

Agha A, Lofgren RP, VanRuiswyk JV, Layde PM. A comparative analysis of health status and medical resource use. *Arch Intern Med* 2000;160(27):3252-7.

Almond, N., Kahwati, L., Kinsinger, L., & Porterfield, D. (2008). The prevalence of overweight and obesity among U.S. military veterans. *Military Medicine*, 173, 544-549.

Ardelt M, Landes SD, Vaillant GE. The long-term effects of World War II combat exposure on later life well-being moderated by generativity. *Research in Human Development* 2010 July 7(3): 202-220.

Asmundson GJG. VAC Canadian Forces survey analysis. Report prepared for Veterans Services Branch, Veterans Affairs Canada. 2000;40 p.

Belik S, Stein MB, Asmundson GJG, Sareen J. Are Canadian Soldiers More Likely to Have Suicidal Ideation and Suicide Attempts than Canadian Civilians? *Amr J Epi* October 2010;9 p.

Ben-Zur H (2002). Coping, affect and ageing: The roles of mastery and self-esteem. *Personality and Individual Differences*, 32(2), 357-372.

Berkman LF, Glass T, Brissett I, Seeman TE (2000). From social integration to health. *Social Science and Medicine*, 51, 843-857.

Berkman LF, Glass T (2000). Social integration, social networks, social support and health. In Berkman LF, Kawachi I, eds. *Social Epidemiology*. New York: Oxford University Press.

Boehmer TK, Boothe VL, Flanders WD, Barrett DH. Health-related quality of life of U.S. military personnel: a population-based study. *Mil Med.* 2003 Nov;168(11):941-7.

Bond EF. Women's physical and mental health sequelae of wartime service. *Nurs Clin North Am.* 2004 Mar;39(1):53-68.

Boyce DG and Pinch FC (1980). Project Transition: Advanced Findings Related to the SCAN Programme, Canadian Forces Personnel Applied Research Unit, Department of National Defence.

Brown SRG. Re-establishment and rehabilitation Canadian Veteran Policy, 1933- 1946. Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Faculty of Graduate Studies, The University of Western Ontario, London, Ontario. October, 1995;379 p.

Brunson BH (1997). Life Satisfaction and Retirement: Military Mid-life Career Change. Dissertation Abstracts International Section A: Humanities and Social Sciences. 57(7).

Burke FS. Deaths among War pensioners. Can Med Assoc J. 1939 Nov; 41(5): 457-465.

CFHS. Health and Lifestyle Information Survey of Canadian Forces Personnel 2004: Regular Force Report. Directorate of Force Health Protection, CF Health Services Group. September 2005;96 p.

CFHS. Health and Lifestyle Information Survey. <http://www.forces.gc.ca/health-sante/pub/hlis-sssv-eng.asp>. Viewed November 16, 2009

CFHS. Health and Lifestyle Information Survey of Canadian Forces Personnel 2008/09: Regular Force Version, Director Military Personnel Operational Research and Analysis. 2008;__p. www.forces.gc.ca/health/information/engraph/HLIS_home_e.asp

CIHI. Health Care in Canada 2002. Canadian Institute for Health Information. Ottawa. 2002.

CIHI. Health Care in Canada 2009. Canadian Institute for Health Information. Ottawa. 2009; 120 p.

Chief Military Personnel. The Canadian Forces (Regular Force and Primary Reserve) compulsory retirement age 60. 2004. Retrieved August 11, 2010 from <http://www.cmp-cpm.forces.gc.ca/pd/pi-ip/14-04-eng.asp>

Clark JA, Spiro A 3rd, Miller DR, Fincke BG, Skinner KM, Kazis LE. Patient-based measures of illness severity in the Veterans Health Study. J Ambul Care Manage. 2005 Jul-Sep;28(3):274-85.

Currie SR, Wang JL. Chronic back pain and major depression in the general Canadian population. 2004;107:(1):54-60.

Desai MM, Rosenheck RA, Desai RA. Time trends and predictors of suicide among mental health outpatients in the Department of Veterans Affairs. J Behav Health Serv Res. 2008 Jan;35(1):115-24. Epub 2007 Nov 8.

DND. Report on Plans and Priorities 2008-09. Department of National Defence, Ottawa.

Dominick KL, Golightly YM, Jackson GL. Arthritis prevalence and symptoms among US non-Veterans, Veterans, and Veterans receiving Department of Veterans Affairs Healthcare. *J Rheumatol*. 2006 Feb;33(2):348-54.

Eaker ED. Book report: Social support and physical health: Understanding the health consequences of relationships by Bert N. Uchino. *Am. J. Epidemiol*. 2005;161(3):297-8.

Elder HW, Rudolph PM. Does retirement planning affect the level of retirement satisfaction? *Financial Services Review*. 1999;8:117-27.

Elder GH Jr, Shanahan MJ, Clipp EC. When war comes to men's lives: life-course patterns in family, work, and health. *Psychol Ageing*. 1994 Mar;9(1):5-16. Carolina Population Center, University of North Carolina at Chapel Hill 27514.

Engel CC Jr. Post-war syndromes: illustrating the impact of the social psyche on notions of risk, responsibility, reason, and remedy. *J Am Acad Psychoanal Dyn Psychiatry*. 2004a Summer;32(2):321-34; discussion 335-43.

Engel CC, Hyams KC, Scott K. Managing future Gulf War Syndromes: international lessons and new models of care. *Philos Trans R Soc Lond B Biol Sci*. 2006 Apr 29;361(1468):707-20.

Engel CC, Jaffer A, Adkins J, Riddle JR, Gibson R. Can we prevent a second "Gulf War syndrome"? Population-based healthcare for chronic idiopathic pain and fatigue after war. *Adv Psychosom Med*. 2004b;25:102-22.

Fitzgerald KG (2006). The Effect of Military Service on Wealth Accumulation. *Research on Ageing*. 28(1):56-83.

Flegal KM: The obesity epidemic in children and adults: current evidence and research issues. *Med Sci Sports Exerc* 1999; 31: S509-14.

Folkman S, Lazarus RS, Gruen RJ, DeLongis A. Appraisal, coping, health status, and psychological symptoms. *Journal of Personality and Social Psychology*. 1986;50(3):571-9.

Fox D. Federal public service retirements: trends in the new millennium. Statistics Canada Business and Labour Market Division Analytical Paper cat. no. 11-621-M. 2008.

Fraser Group. Canadians' Access to Insurance for Prescription Medicines -- Executive Summary. Submitted to Health Canada by Applied Management in association with Fraser Group Tristat Resources. March 2000;15 p.

Frayne SM, Chiu VY, Iqbal S, Berg EA, Laungani KJ, Cronkite RC, Pavao J, Kimerling R. Medical Care Needs of Returning Veterans with PTSD: Their Other Burden. *J Gen Intern Med*. 2010 Sep 18;

Frayne SM, Parker VA, Christiansen CL, Loveland S, Seaver MR, Kazis LE, Skinner KM. Health status among 28,000 women Veterans. *J Gen Intern Med.* 2006 Mar;21 Suppl 3:S40-6.

Frayne SM, Yu W, Yano EM, Ananth L, Iqbal S, Thrailkill A, Phibbs CS. Gender and use of care: planning for tomorrow's Veterans Health Administration. *J Womens Health (Larchmt).* 2007 Oct;16(8):1188-99.

Fuller-Thomson E, Sawyer J. Lifetime prevalence of suicidal ideation in a representative sample of Canadians with Type 1 diabetes Volume 83, Issue 1, Pages e9-e11 (January 2009). published online 15 December 2008.

Goldzweig CL, Balekian TM, Rolón C, Yano EM, Shekelle PG. The state of women veterans' health research. Results of a systematic literature review. *J Gen Intern Med.* 2006 Mar;21 Suppl 3:S82-92.

GoC. The Human Face of Mental Health and Mental Illness in Canada. Government of Canada. Ottawa. 2006;203 p.

Graves RT (2005). A Comparative Study of the Life Satisfaction of Early Retirement Military Officers, Dissertation, Graduate Studies of Texas A&M University.

Gray GC, Chesbrough KB, Ryan MA, Amoroso P, Boyko EJ, Gackstetter GD, Hooper TI, Riddle JR; Millennium Cohort Study Group. The millennium Cohort Study: a 21-year prospective cohort study of 140,000 military personnel. *Mil Med.* 2002 Jun;167(6):483-8. Comment in: *Mil Med.* 2002 Nov;167(11):ii.

Gulec M & Tekbas OF (2001). Determination of daily living activities of retired officers. *Military Medicine.* 166(3):259-263.

Health Canada: Canadian guidelines for body weight classification in adults. Ottawa, Canada, Health Canada Publications Centre, Catalogue no: H49-179/2003E, 2003.

Henderson WD. Cohesion: The human element in combat. Washington, D.C.: National Defense University Press. 1985.

Higate P, (2001) Theorizing Continuity: From Military to Civilian Life, *Armed Force and Society.* Vol. 27(3), 443-460.

Hoge CW, Toboni HE, Messer SC, Bell N, Amoroso P and Orman DT (2005). The occupational burden of mental disorders in the US military: psychiatric hospitalizations, involuntary separations, and disability. *American Journal of Psychiatry.* 162(3):585-91.

Holbrook TL, Hoyt DB. The impact of major trauma: quality-of-life outcomes are worse in women than in men, independent of mechanism and injury severity. *Journal of Trauma.* 2004;56:284-90.

Hopman WM, Towheed T, Anastassiades T, Tenenhouse A, Poliquin S, Berger C, et al. Canadian normative data for the SF-36 health survey. *CMAJ* 2000;163(3):265-71.

Hopman WM, Berger C, Joseph L, Towheed T, Prior JC, Anastassiades T, Poliquin S, Zhou W, Adachi JD, Hanley DA, Papadimitropoulos EA, Tenenhouse A; CaMos Research Group. Health-related quality of life in Canadian adolescents and young adults: normative data using the SF-36. *Can J Public Health*. 2009 Nov-Dec;100(6):449-52.

Humes LE, Joellenbeck LM, Durch JS. Institute of Medicine (IOM). Committee on noise-induced hearing loss and tinnitus associated with military service from World War II to the present. *Noise and military service: implications for hearing loss and tinnitus*. Institute of Medicine, National Academies. 2006.
<http://fermat.nap.edu/catalog/11443.html> viewed 07 April 2006.

Humphries KH, van Doorslaer E. Income-related health in Canada. *Social Science & Medicine*. 2000;50:66Z-71.

Hyams, K.C., Barrett, D.H., Duque, D., Engel, Jr., C.C., Friedl, K., Gray, G., Hogan, B., Kaforski, G., Murphy, F., North, R., Riddle, J., Ryan, M.K., Trump, D.H., & John, O.P., Donahue, E.M., & Kentle, R. L. (1991). *The Big Five Inventory-Versions 4a and 5a*. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.

IOM. Gulf War and Health: Volume 8: Update of Health Effects of Serving in the Gulf War. Committee on Gulf War and Health: Health Effects of Serving in the Gulf War, Update 2009; Board on the Health of Select Populations; Institute of Medicine. 2010 Apr;340 p.

IOM. Gulf War Veterans: Treating Symptoms and Syndromes. Committee on Identifying Effective Treatments for Gulf War Veterans' Health Problems, Board on Health Promotion and Disease Prevention, Bernard M. Rosof and Lyla M. Hernandez, Editors. 2001;163 p.

Ipsos Reid. Qualitative and quantitative research: Views of the Canadian Forces – 2010 tracking study. Prepared for Department of National Defence. March 2010;95 p.
http://epe.lac-bac.gc.ca/100/200/301/pwgsc-tpsgc/por-ef/national_defence/2010/078-09/report.pdf viewed 16 Sept 2010.

Iversen A, Nikolaou V, Greenberg N, Unwin C, Hull L, Hotopf M, Dandeker C, Ross J & Wessely S. (2005) What Happens to British Veterans When They Leave the Armed Forces? *Eur.J.Public Health*. 15(2):175-184.

Janssen I, Heymsfield SB, Ross R: Application of simple anthropometry in the assessment of health risk: implications for the Canadian physical activity, fitness and lifestyle appraisal. *Can J Appl Physiol*. 2002; 27:396-414.

Jetly R, Cooper K. PTSD: The symptoms and how to treat. *Can J CME*. Feb 2008;20(2):45-48.

Jones E. Mild Traumatic Brain Injury in the military: An historical evaluation. Annex A in U.K. MoD. Mild Traumatic Brain Injury Project Team Final Report. Defence Medical Services. U.K. Ministry of Defence. London. 25 March 2008;117 p.
<http://www.mod.U.K./DefenceInternet/MicroSite/DMS/OurPublications> viewed 07 July 2008.

Joo SH, Grable JE. An exploratory framework of the determinants of financial satisfaction. *Journal of Family and Economic Issues*, 2004;25(1):25-50.

Kazis LE, Miller DR, Clark J, Skinner K, Lee A, Rogers W, Spiro A 3rd, Payne S, Fincke G, Selim A, Linzer M. Health-related quality of life in patients served by the Department of Veterans Affairs: results from the Veterans Health Study. *Arch Intern Med*. 1998 Mar 23;158(6):626-32.

Kazis LE, Ren XS, Lee A, Skinner K, Rogers W, Clark J, Miller DR. Health status in VA patients: results from the Veterans Health Study. *Am J Med Qual*. 1999 Jan-Feb;14(1):28-38.

Kilshaw SM. Friendly Fire -- The construction of Gulf War Syndrome narratives. *Anthropology & Medicine*. August 2004;11(2):149-160.

Kilshaw, S. Gulf War Syndrome: A Reaction to Psychiatry” s Invasion of the Military? *Cult Med Psychiatry*. 2008 Jun ; 32(2) : 219-37.

Kobasa SC. Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*. 1979;37(1):1-11.

Knapik JJ, Sharp MA, Darakjy S, Jones SB, Hauret KG, Jones BH: Temporal changes in the physical fitness of US Army recruits. *Sports Med* 2006;36:613-34.

Kuh D, Ben-Shlomo Y, Lynch J, Hallqvist J, Power C. Life course epidemiology. *J Epidemiol Community Health*. 2003 Oct;57(10):778-83. Erratum in: *J Epidemiol Community Health*. 2003 Nov;57(11):914.

Lazarus RS, Folkman S. *Stress, appraisal, and coping*. New York: Springer Publishing Company, Inc. 1984.

Lee JEC. Temporal trends in body mass, health and lifestyle in Canadian Forces recruits. DGMPRA Technical Memorandum 2010-020. 2010.

Lee JEC, Whitehead J, Dubiniecki C. Descriptive Analyses of the Recruit Health Questionnaire 2003 – 2004. Director General Military Personnel Research & Analysis. Technical Memorandum. DGMPRA TM 2010-010. March 2010;78 p.

Le Petit C, Berthelot JM. Obesity: a growing problem. Statistics Canada, Catalogue no 82-003. Health Rep 2006; 17: 43-50.

Lincoln AE, Smith GS, Amoroso PJ and Bell NS (2002). The Natural History and Risk Factors of Musculoskeletal Conditions Resulting in Disability Among US Army Personnel. *Work*. 18(2):99-113.

MacCoun RJ. Unit cohesion and military performance. In National Defense Research Institute, Sexual orientation and U.S. military personnel policy: Policy options and assessment (pp. 283-331). Santa Monica, CA: RAND. 1993.

MacLean MB, Sweet J, Thompson J, Van Til L & Poirier A (2009). Canadian Forces at Risk of Becoming Disability Benefits Clients: Can they be identified with administrative data? Veterans Affairs Canada. Research Directorate. Draft Technical Report, Oct 2009.

MacLean MB, Van Til L, Thompson JM, Pedlar D, Poirier A, Adams J, Hartigan S, Sudom K. Life After Service Study: Data Collection Methodology for The Income Study and The Transition to Civilian Life Survey. Veterans Affairs Canada Research Directorate Technical Report. 2010a: p79.

MacLean MB, Van Til L, Thompson JM, , Poirier A, Sweet J, Pedlar D, Adams J, Sudom K, Campbell C, Murphy B, & Dionne C. Income Study: Regular Force Veteran Report. Veterans Affairs Canada, Research Directorate and Department of National Defence, Director General Military Personnel Research and Analysis. 2010b: 70 p.

Mageroy N, Riise T, Johnsen B H, & Moen BE (2007). Health-related quality of life in the Royal Norwegian Navy: Does officer rank matter? *Military Medicine*. 172(8):835-842.

Marshall VW. Economic effects of PTSD: A Review. Report prepared for Veterans Affairs Canada. 2005;34 p.

Marshall VW, Matteo RA, & Mueller MM. Canadian Forces Clients of Veterans Affairs Canada: Employment Status, Career and Retirement Planning Issues. Report prepared for Veterans Affairs Canada. 2000;65 p.

Marshall VW & Matteo RA. Canadian Forces Clients of Veterans Affairs Canada: "Risk Factors" for Post-Release Socioeconomic Well-being. Report prepared for Veterans Affairs Canada. 2004.

Marshall VW, Matteo RA, Pedlar D. Work-related Experience and Financial Security of Veterans Affairs Canada Clients: Contrasting Medical and Non-medical Discharge. Report prepared for Veterans Affairs Canada. 2005a;41 p.

Marshall VW, Matteo RA, & Pedlar D. Post-military Experiences of Veterans Affairs Canada Clients: The Need for Military Release Readiness. Report prepared for Veterans Affairs Canada. 2005b:24 p.

Mawani FN, Gilmour H. Validation of self-rated mental health. Statistics Canada. Health Reports. September 2010;21(3);16 p.

Moulin DE, Clark AJ, Speechley M, Morley-Forster PK. Chronic pain in Canada--prevalence, treatment, impact and the role of opioid analgesia. Pain Res Manag. 2002 Winter;7(4):179-84.

Millar WJ. Disparities in prescription drug insurance coverage. Health Reports. 1999 Spring;10(4):11-31(ENG);9-30(FRE).

Millar WJ. Hearing problems among seniors. Health Reports. 82-003 2005;16(4).

Neary P. "Without the stigma of pauperism": Canadian Veterans in the 1930" s. British Journal of Canadian Studies. 2009;22(1):31-62.

Nelson KM). The burden of obesity among a national probability sample of Veterans. Journal of General Internal Medicine. 2006;21:915-19.

Park, A Profile of the Canadian Forces. Statistics Canada. *Perspectives*. Cat No. 75-001-X. July 2008.

Patten SB, Wang JL, Williams JV, Currie S, Beck CA, Maxwell CJ, El-Guebaly N. Descriptive epidemiology of major depression in Canada. Can J Psychiatry. 2006 Feb;51(2):84-90.

Pearlin LI, Menaghan EG, Lieberman, MA, Mullan, JT (1981). The stress process. Journal of Health and Social Behavior, 22 (Dec), 337-356.

Pépin K, Sudom K, & Dunn J (2006). "Your say": Quality of Life 2005 Findings, DRDC CORA Technical Memorandum 2006-41.

Pinch FC (1975). Research on Relocation of Military Leavers: Discussion of Issues and Proposal, Canadian Forces Personnel Applied Research Unit Department of National Defence.

Pinch FC and Hamel C (1977). Relocation of Military Leavers: An Overview and Some Preliminary Results, Canadian Forces Personnel Applied Research Unit, Department of National Defence.

Pinch FC and Hamel C (1978). The Transition to Civilian Life Among CF Members: Preliminary Results, Stage II, Canadian Forces Personnel Applied Research Unit, Department of National Defence.

Pinch FC (1980). Mid-Career Transition in the Military Institution: A Review of the Issues and Framework for Analysis, Canadian Forces Personnel Applied Research Unit, Department of National Defence.

Pranger T, Murphy K, Thompson JM. Shaken world - coping with transition to civilian life. *Canadian Family Physician*. February 2009;55:159-61.
<http://www.cfp.ca/cgi/content/full/55/2/159>

PHAC Determinants of Health. Public Health Agency of Canada. <http://www.phac-aspc.gc.ca/ph-sp/determinants/index-eng.php> viewed July 2009.

Ramage-Morin PL. Chronic pain in Canadian seniors. *Health Reports*. 2008;19(1):37-52.

Ramage-Morin PL, Gilmour H. Chronic pain at ages 12 to 44. *Health Reports*. December 2010:9 p.

Ramchand R, Schell TL, Karney BR, Osilla KC, Burns RM, Caldarone LB. Disparate rate estimates of PTSD among service members who served in Iraq and Afghanistan: Possible explanations. *J Trauma Stress*. 2010 Feb 4;23(1):59-68.

RACGWVI. Gulf War illness and the health of Gulf War Veterans - Scientific findings and recommendations. The Research Advisory Committee on Gulf War Veterans' Illnesses. U.S. Department of Veterans Affairs. Washington, D.C.: U.S. Government Printing Office, November 2008:452 p.

Resnik LJ, Allen SM. Using International Classification of Functioning, Disability and Health to understand challenges in community reintegration of injured veterans. *Journal of Rehabilitation Research & Development*. 2007 44(7) p1991-1006.

Resnik L, Plow M, Jette A. Development of CRIS: Measure of Community Reintegration of Injured Service Members. *J Rehabil Res Dev*. 2009;46(4):469-80.

Richardson LK, Frueh BC, Acierno R. Prevalence estimates of combat-related post-traumatic stress disorder: critical review. *Aust N Z J Psychiatry*. 2010 Jan;44(1):4-19.

Richardson JD, Long ME, Pedlar D, Elhai JD. Posttraumatic stress disorder and health-related quality of life in pension-seeking Canadian World War II and Korean War Veterans. *J Clin Psych* 2010;71(8):1099-1101.

Richardson JD, Naifeh JA, and Elhai JD (2007). Posttraumatic Stress Disorder and Associated Risk Factors in Canadian Peacekeeping Veterans with Health-related Disabilities, *Canadian Journal of Psychiatry*. 2007 Aug; 52(8):510-8.

Riddle JR, Smith TC, Smith B, Corbeil TE, Engel CC, Wells TS, Hoge CW, Adkins J, Zamorski M, Blazer D; for the Millennium Cohort Study Team. Millennium Cohort: The 2001-2003 baseline prevalence of mental disorders in the U.S. military. *J Clin Epidemiol*. 2007 Feb;60(2):192-201.

Romans S, Cohen M, Forte T. Rates of depression and anxiety in urban and rural Canada. *Soc Psychiatr Epi* 2010.

Rosen LN, Bliese PD, Wright K, Gifford RK. Gender composition and group cohesion in Army units: A comparison of five studies. *Armed Forces and Society*, 1999;25:365-86.

Ross N. Community belonging and health. *Health Reports*, 13 (3), 33-39. Statistics Canada, Catalogue 82-003. 2002.

Sanderson K, Andrews G. The SF-12 in the Australian population: cross-validation of item selection. *Aust N Z J Public Health*. 2002a;26(4):343-5.

Sanderson K, Andrews G. Prevalence and Severity of Mental Health–Related Disability and Relationship to Diagnosis. *Psychiatric Serv*. 2002b;53(1):80-6.

Sanderson K, Andrews G, Jelsma W. Disability measurement in the anxiety disorders: Comparison of three brief measures. *Journal of Anxiety Disorders*. 2001;15(4):333-4.

Sareen J, Belik SL, Afifi TO, Asmundson GJG, Cox B, Stein MB. Canadian Military Personnel's Population Attributable Fractions of Mental Disorders and Mental Health Service Use Associated With Combat and Peacekeeping Operations. *American Journal of Public Health* December 2008;98(12):2191-98.

Stephens T, Dulberg C, Joubert N. Mental health of the Canadian population: A comprehensive analysis. Public Health Agency of Canada. *Chronic Diseases in Canada*. 2000;20(3). www.phac-aspc.gc.ca/publicat/cdic-mcc/20-3/c_e.html viewed 14 October 2010.

Sareen J, Cox B, Afifi T, Stein M, Belik S, Meadows G, Asmundson G. Combat and Peacekeeping Operations in Relation to Prevalence of Mental Disorders and Perceived Need for Mental Health Care. *Arch Gen Psychiatry*. 2007a Jul; 64 : 843-852.

Sareen J, Cox BJ, Stein MB, Afifi TO, Asmundson GJG. Physical and Mental Comorbidity, Disability, and Suicidal Behavior Associated With Posttraumatic Stress Disorder in a Large Community Sample. *Psychosomatic Medicine* 2007b;69:242–248.

Saris-Baglama RN et al. *QualityMetric Health Outcomes™ Scoring Software 3.0 User's Guide*. QualityMetric Incorporated, Lincoln, Rhode Island, USA. 207;157 p.

Sarma S, Basu K, Gupta A. The influence of prescription drug insurance on psychotropic and non-psychotropic drug utilization in Canada. *Soc Sci Med*. 2007 Dec;65(12):2553-65. Epub 2007 Aug 29.

Schnurr PP, Lunney CA. Exploration of gender differences in how quality of life relates to posttraumatic stress disorder in male and female veterans. *Journal of Rehabilitation Research and Development*. 2008;45:383-94.

Schopfolocher, D. An indicator of social support from the Canadian Community Health Survey (CCHS). Alberta Health and Wellness, Data Points, June 2002.

Schwarzer R, Leppin A. Social Support and Health: A Theoretical and Empirical Overview. *Journal of Social and Personal Relationships*. February 1991;8:99-127.

Scoppio G, Idzenga R, Mikles S. Transitions: a study of military trades corresponding to Red Seal civilian trades. DND CDA 3502-2. 2009.

Seal KH, Metzler TJ, Gima KS, Bertenthal D, Maguen S, Marmar CR. Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002-2008. *Am J Public Health*. 2009 Sep;99(9):1651-8. Epub 2009 Jul 16.

Settersten, RA. When nations call: how wartime military service matters for the life course and ageing. *Res Ageing*. 2006 Jan;28(1):12-36.

Sharma S, Singh S & Ghosh SN (1996). Psychological Well-Being and family integration: a study of retired Army Personnel. *Journal of the Indian Academy of Applied Psychology*. 22(1): 11-18.

Shields M. Community belonging and self-perceived health. *Health Reports (Statistics Canada, Catalogue 82-003)* 2008;19(2):51-60.

Shields, M, Connor-Gorber S, Tremblay MS. Effects of measurement on obesity and morbidity. *Health Reports (Statistics Canada, Catalogue 82-003)* 2008a;19(2): 77-84.

Shields, M, Connor Gorber S, Tremblay MS. Estimates of obesity based on self-report versus direct measures. *Health Reports (Statistics Canada, Catalogue 82-003)* 2008b; 19(2): 61-76.

Shields M, Tremblay MS, Laviolette M, Craig CL, Janssen I, Conner, Gorber S. Fitness of Canadian adults: Results from the 2007-2009 Canadian Health Measures Survey. *Statistics Canada, catalogue no. 82-003-XPE. Health Rep* 2010;21:1-15.

Singh JA, Borowsky SJ, Nugent S, Murdoch M, Zhao Y, Nelson DB, Petzel R, Nichol KL. Health-related quality of life, functional impairment, and healthcare utilization by veterans: veterans' quality of life study. *J Am Geriatr Soc*. 2005 Jan;53(1):108-13.

Singh JA, Murdoch M (). Effect of health-related quality of life on women and men's Veterans Affairs (VA) health care utilization and mortality. *Society of General Internal Medicine*. 2007;22:1260-67.

Smith B, Wingard DL, Ryan MA, Macera CA, Patterson TL, Slymen DJ. U.S. military deployment during 2001-06: Comparison of subjective and objective data sources in a large prospective health study. *Ann Epidemiol* 2007;17(12):976-82.

Spiegel PE, Shultz KS. The influence of preretirement planning and transferability of skills on naval officers' retirement satisfaction and adjustment. *Military Psychology*. 2003;15(4):285-307.

Spitzer, RL., Kroenke, K., & Williams, JBW (1999). Validation and Utility of a Self-report Version of the PRIME-MD: the PHQ Primary Care Study. *Journal of the American Medical Association*, 282, 1737-1744.

Spreitzer E, Snyder EE. Correlates of life satisfaction among the aged. *J Gerontol* 1974;29(4):454-58.

Standing Committee on National Defence and Veterans Affairs (SCONDVA) (1998). *Moving forward: A Strategic Plan for Quality of Life Improvements in the Canadian Forces*. Ottawa, Canada.

Statistics Canada. Canadian Community Health Survey: Canadian Forces supplement on mental health. 2003. <http://www.statcan.ca/Daily/English/030905/d030905b.htm> viewed October 17, 2006.

Statistics Canada. Community Belonging. <http://www.statcan.gc.ca/pub/82-229-x/2009001/envir/cob-eng.htm> viewed 22 October 2010.

Statistics Canada. Survey methods and practices. Statistics Canada. Ottawa. Catalogue no. 12-587-X. 2010a;408 p.

Statistics Canada. Survey on Transition to Civilian Life 2010a Microdata User Guide. Statistics Canada, Special Surveys Division, Ottawa. 2010b;25 p.

Orpana HM, Lemyre L, Gravel R. Income and psychological distress: The role of the social environment. Statistics Canada. Health Reports Catalogue no. 82-003-XWE. 2009;20(1).

Statistics Canada. Survey Methods and Practices. Statistics Canada, Ottawa. 2010b;408 p.

Statistics Canada. Health Indicators. Statistics Canada, Ottawa. Catalogue no. 82-221-X. June 2008;97 p.

Statistics Canada. The Canadian Persian Gulf Cohort Study: Detailed Report, prepared for the Gulf War Veterans Cohort Study Advisory Committee. Nov 2005.

Statistics Canada. Feasibility Study: Transition Outcomes Study of Canadian Veterans Special Surveys Division, Statistics Canada, Ottawa. 2009.

Statistics Canada. Veterans Care Needs Survey, Report on Findings. Methodology Branch of Statistics Canada. Ottawa. Catalogue no. 89-554-XPE. 1998;32 pages + app.

Stephens T, Dulberg C, Joubert N. Mental health of the Canadian population: A comprehensive analysis. Public Health Agency of Canada. Chronic Diseases in Canada. 2000;20(3). www.phac-aspc.gc.ca/publicat/cdic-mcc/20-3/c_e.html viewed 14 October 2010.

Stern A, Wolfe J, Daley J, Zaslavsky A, Roper SF, Wilson K. Changing demographic characteristics of women veterans: results from a national sample. *Mil Med.* 2000 Oct;165(10):773-80.

Stow JW (1997). A Study of the Treatment of Service Members Released from the Canadian Forces on Medical Grounds, Director Personnel Policy, Department of National Defence, August 1997.

Street AE, Vogt D, Dutra L. A new generation of women veterans: stressors faced by women deployed to Iraq and Afghanistan. *Clin Psychol Rev.* 2009 Dec;29(8):685-94. Epub 2009 Aug 24.

Stuart JA, Ursano RJ, Fullerton CS, Wessely S. Belief in exposure to chemical and biological agents in Persian Gulf War soldiers. *J Nerv Ment Dis.* 2008 Feb;196(2):122-7.

Sudom K. Moderating effects of gender in the relationship between social support and mental health. DGMPRA Technical Memorandum 2009-020. 2009.

Sudom K, Otis N, Watkins K. Fitness levels in Canadian Forces recruits: 2002-2009. DGMPRA Technical Memorandum 2010-018. 2010.

Sulsky SI, Mundt KA, Bigelow C, and Amoroso PJ (2002). Risk Factors for Occupational Knee Related Disability Among Enlisted Women in the US Army, *Occup. Environ. Med.* 59(9):601-7.

Sweet J and Thompson JM. Literature Review of Military to Civilian Transition – Results of Initial Searches, Veterans Affairs Canada, Feb 2009.

Taylor MA, Shultz KS, Spiegel PE, Morrison RF & Greene J (2007). Occupational Attachment and Met Expectations as Predictors of Retirement Adjustment of Naval Officers. *Journal of Applied Social Psycholog.*, 37(8): 1697-1725.

Thompson JM, Chiasson R, Loisel P, Besemann M, Pranger T. A sailor's pain: Veterans' musculoskeletal disorders, chronic pain, and disability. *Canadian Family Physician.* November 2009;55:1085-88. <http://www.cfp.ca/cgi/content/full/55/11/1085>

Thompson JM, MacLean MB. Evidence for Best Practices in the Management of Disabilities. Research Directorate Technical Report. Veterans Affairs Canada. 27 July 2009;51 p.

Thompson JM, Pedlar D (2006). Monitoring Veterans Affairs Canada (VAC) Client Population Health in the New Re-Establishment Programs. Veterans Affairs Canada, Charlottetown. 23 February 2006;44p.

Thompson JM, Pranger T, Ross D, Morrison M. Suicide Prevention at Veterans Affairs Canada: Framework. Veterans Affairs Canada. Suicide Prevention Approach Working Group, Veterans Affairs Canada. Charlottetown. National Mental Health Directorate Technical Report. 01 September 2010;70 p.

Thompson JM, Sweet J, Pedlar D. Preliminary Analysis of the CCHS 2.1 National Survey of the Health of Canadian Military Service Veterans. Veterans Affairs Canada. Data Report. 26 September 2008; 24p.

Tooley RW. Hearing loss in Canadian Army units. Medical Services Journal, Canada. 1965 Mar;173-176.

Torrance GM, Hooper MD, Reeder BA: Trends in overweight and obesity among adults in Canada (1970-1992): evidence from national surveys using measured height and weight. Int J Obes Relat Metab Disord 2002;26:797-804.

Tremblay MS, Katzmarzyk PT, Willms JD: Temporal trends in overweight and obesity in Canada, 1981-1996. Int J Obes Relat Metab Disord 2002;26:538-43.

Wilson D, Tucker G, Chittleborough C. Rethinking and rescoring the SF-12. Soz Praventivemed 2002;47(3):172-7.

United States General Accounting Office (2002), Military and Veterans Benefits: Observations on the Transition Assistance Program. July 2002. GAO-02-914T.

Van Ameringen M, Mancini C, Patterson B, Boyle MH. Post-traumatic stress disorder in Canada. CNS Neurosci Ther. 2008 Fall;14(3):171-81.

Van Til, L. Population Health Research at VAC. Veterans Affairs Canada Research Directorate Brief Report. 30 January 2009.

VAC Suicide Prevention Approach Working Group. Suicide Prevention at Veterans Affairs Canada: Activities and Recommendations. Veterans Affairs Canada. National Mental Health Directorate Technical Report. 31 August 2010; 37 p.

Veterans Affairs Canada Quality Management Unit (2009). Re-establishment and Compensation Programs: Outcome Measurement, Results Available for the 2007-08 Fiscal Year, Final April 2009.

Van Til, L (2009). Population Health Research at VAC, Research Directorate Brief Report, Jan 30, 2009.

Vieweg, WVR, Julius DA, Fernandez A, Levy JR, Satterwhite L, Benesek J, Feuer SJ. Posttraumatic stress disorder and body mass index in military veterans: the Richmond experience. *Stress, Trauma, and Crisis*. 2006;9:17-28.

Vogt DS, Pless AP, King LA, King DW. Deployment stressors, gender, and mental health outcomes among Gulf War I veterans. *Journal of Traumatic Stress*. 2005;18:115-27.

Vogt DS, Samper RE, King DW, King LA, Martin JA. Deployment stressors and posttraumatic stress symptomatology: Comparing Active Duty and National Guard/Reserve personnel from Gulf War I. *Journal of Traumatic Stress*. 2008;21:66-74.

Walker J. *Control and the psychology of health: theory, measurement and applications*. Buckingham UK, Open University Press. 2001.

Wallace AE, Weeks WB, Wang S, Lee AF, Kazis LE. Rural and urban disparities in health-related quality of life among veterans with psychiatric disorders. *Psychiatr Serv*. 2006 Jun;57(6):851-6.

Ware JE, Kosinski M, Turner-Bowker DM, Gandek B. User's manual for the SF-12v2® Health Survey. QualityMetric Incorporated, Lincoln, Rhode Island. April 2009 printing;230 p.

Washington DL, Sun S, Canning M. Creating a sampling frame for population-based veteran research: Representativeness and overlap of VA and Department of Defense databases. *J Rehabil Res Dev*. 2010;47(8):763-72.

Weaver SF, Stewart NK.. Factors influencing combat stress reactions and post-traumatic stress disorder: A literature review. U.S. Army Research Institute for the Behavioral and Social Sciences. 1988.

WHO. Definition of Health. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the WHO, no. 2, p. 100) and entered into force on 7 April 1948.

World Health Organization (1998), *Health Promotion Glossary*. Geneva. WHO/HPR/HEP/98.1 :36 p.

Wright RJ. Why old soldiers cannot be allowed to simply fade away: life course epidemiology of war. *J Epi Comm Health* 2009;63(5):338-9.

Yano EM, Hayes P, Wright S, Schnurr PP, Lipson L, Bean-Mayberry B, Washington DL. Integration of women veterans into VA quality improvement research efforts: what researchers need to know. *J Gen Intern Med*. 2010 Jan;25 Suppl 1:56-61.

Yanos, R. C. (2005). Perceptions of transition to civilian life among recently retired Air Force officers. ProQuest Information & Learning). Dissertation Abstracts International: Section B: The Sciences and Engineering. 66(6):3448-3448.

Zamorski M. Report of the Canadian Forces expert panel on Suicide Prevention. Department of National Defence/Canadian Forces. Ottawa. January 2010:80 p.

Zamorski MA, Galvin M. Physical and mental health status of Canadian troops 4 to 6 months after return from service in Afghanistan: Findings of a compulsory screening interview program.

http://www.forces.gc.ca/health/information/engraph/Depl_Health_research_e.asp viewed September 22, 2006.

Zinzow HM, Grubaugh AL, Monnier J, Suffoletta-Maierle S, Frueh BC. Trauma among female veterans: a critical review. Trauma Violence Abuse. 2007 Oct;8(4):384-400.

Zivin K, Myra Kim H, McCarthy JF, Austin KL, Hoggatt KJ, Walters H, Valenstein M. Suicide Mortality Among Individuals Receiving Treatment for Depression in the Veterans Affairs Health System: Associations with Patient and Treatment Setting Characteristics. Am J Public Health. 2007 ; Dec;97(12):2193-2198.

Appendix

Appendix 1. Indicator definitions.

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
Health	General Health	Perceived health, very good or excellent	In general, would you say your health is...? Excellent, Very, good, Good, Fair, Poor	CCHS ^C 2007-08	Population who rate their own health status as being either excellent or very good. Self-rated health is an indicator of overall health status. It can reflect aspects of health not captured in other measures, such as incipient disease, disease severity, aspects of positive health status, physiological and psychological reserves and social and mental function.
		Perceived mental health, very good or excellent	In general, would you say your mental health is...? Excellent, Very good, Good, Fair, Poor	CCHS 2007-08	Population who rate their own mental health status as being excellent or very good. Self-reported mental health provides a general indication of the population suffering from some form of mental disorder, mental or emotional problems, or distress, not necessarily reflected in self-reported (physical) health.
		Satisfaction with life (satisfied or very satisfied)	How satisfied are you with your life in general? Very satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied Very dissatisfied	CCHS 2007-08	Population who reported they were satisfied or very satisfied with life.
		Perceived life stress, (quite a bit or extremely)	Thinking about the amount of stress in your life, would you say that most days are...? Not at all, Not very, A bit, Quite a bit, Extremely (stressful).	CCHS 2007-08	Population aged 15 or older reported that most days were extremely or quite a bit stressful.
		Health-related quality of life (SF-12)	Derived by Statistics Canada using QualityMetric [®] s computer scoring software.	1998 US Norm for Non-Institutionalized Population	The survey included Version 1.0 of QualityMetric [®] s SF-12 Health Survey (Short-Form 12-Item Health Survey) as a measure of self-reported, health-related quality of life (HRQoL). Includes physical (PCS) and mental (MCS) summary scores.
	Chronic Conditions	Asthma	Do you have asthma?	CCHS 2007-08	Asthma is a chronic inflammatory disorder of the airways that causes coughing, shortness of breath, chest tightness and wheezing. Quality of life can be affected not only by disturbing asthma attacks, but also by absences from work and limitations in other activities.

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
		Arthritis	Do you have arthritis, excluding fibromyalgia?	CCHS 2007-08	Population who reported being diagnosed by a health professional with arthritis. The term arthritis is used to describe many conditions that affect joints, the tissues surrounding joints, and other connective tissue. The most common types are osteoarthritis and rheumatoid arthritis. The resulting pain, stiffness, swelling and/or deformity of the joints can substantially reduce quality of life.
		Back Problems	Do you have back problems, excluding fibromyalgia and arthritis?	CCHS 2007-08	Population who reported being diagnosed by a health professional with a back problems.
		High Blood Pressure	Remember, we're interested in conditions diagnosed by a health professional. Do you have high blood pressure?	CCHS 2007-08	Population who reported having high blood pressure diagnosed by a health profession but not including ever having been diagnosed with high blood pressure.
		Diabetes	Do you have diabetes?	CCHS 2007-08	Population who reported that they have been diagnosed by a health professional as having diabetes. Includes females 15 and over who reported that they have been diagnosed with gestational diabetes. Diabetes is a disease where the body does not produce enough insulin, or when usage of the insulin that is produced is not effective. Diabetes may lead to reduced quality of life as well as complications such as heart disease, stroke, and kidney disease.
		Heart Disease	Do you have heart disease?	CCHS 2007-08	Population who reported being diagnosed by a health professional with heart disease.
		Cancer	Do you have cancer?	CCHS 2007-08	Population who reported having cancer diagnosed by a health profession but not including ever having been diagnosed with cancer.
		Stroke effects	Do you suffer from the effects of a stroke?	CCHS 2007-08	Population who reported currently suffering from the effects of a stroke diagnosed by a health professional.
		Bowel Disorder	Do you suffer from a bowel disorder such as Crohn's Disease, ulcerative colitis, Irritable Bowel Syndrome or bowel incontinence?	CCHS 2007-08	Population who reported being diagnosed by a health professional with a bowel disorder such as Crohn's Disease, ulcerative colitis, Irritable Bowel Syndrome or bowel incontinence.
		Chronic obstructive pulmonary disease (COPD)	Derived by Statistics Canada using age variable (30+). Do you have chronic bronchitis? (Yes) or Do you have emphysema? (Yes) or Do you have chronic pulmonary disease (COPD)?	CCHS 2007-08	Population aged 30 and over who reported being diagnosed by a health professional with chronic bronchitis, emphysema or chronic obstructive pulmonary disease (COPD).

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
		Hearing problem (difficulty hearing or use assistive device)	I am going to ask you about conditions that have lasted, or are expected to last, six months or more. Which of the following best describes your ability to hear? You cannot hear without the use of a hearing aid or assistive device. You have difficulty hearing. You have no problem hearing.	--	Population who reported that they could not hear without the use of a hearing aid or assistive device, or had difficulty hearing.
		Pain or discomfort (always present)	Do you have periods of pain or discomfort that reoccur from time to time?	-	Population who reported having pain or discomfort that is always present (STCL).
		Mood disorder (Mania, dysthymia or bipolar disorder)	Do you have a mood disorder such as mania, dysthymia or bipolar disorder?	--	Population who reported being diagnosed by a health professional with a mood disorder such as mania, dysthymia or bipolar disorder.
		Depression or anxiety	Do you have depression or anxiety?	--	Population who reported being diagnosed by a health professional with depression or anxiety.
		Posttraumatic Stress Disorder (PTSD)	Do you have post-traumatic stress disorder (PTSD)?	--	Population who reported being diagnosed by a health professional with post-traumatic stress disorder (PTSD).
		Anxiety Disorder	Do you have an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder?	CCHS 2007-08	Population who reported being diagnosed by a health professional with an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder.
		Suicidal ideation, ever	Have you ever seriously considered committing suicide or taking your own life?		Population who reported ever seriously considering taking their own life.
		Suicidal ideation, past 12 months	Has this happened in the past 12 months?		Population who had ever seriously considering taking their own life who had considered in the past 12 months.
		Suicide attempts, ever	Have you ever attempted to commit suicide or tried taking your own life?		Population who had ever seriously considering taking their own life who had ever attempted committing suicide.
		Suicide attempts, past 12 months	Did this happen in the past 12 months?		Population who had ever seriously considering taking their own life and who had ever attempted committing suicide, and who did so in the past 12 months.

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
	Weight	Overweight	Derived by Statistics Canada from series of questions on weight and height.	CCHS 2007-08	Asked of all respondents except pregnant respondents. "Overweight" is a specific Body Mass Index (BMI) category. Underweight and overweight are associated with increased health risk, but less than for obese BMI categories. BMI is a method of classifying body weight according to health risk. Higher BMI has been associated with higher health risk. BMI is calculated by dividing the respondent's body weight (in kilograms) by their height (in meters) squared. Calculated for the population aged 18 and over, excluding pregnant females and persons less than 3 feet (0.9 meters) tall or greater than 6 feet 11 inches (2.1 meters)
		Obese	Derived by Statistics Canada from series of questions on weight and height.	CCHS 2007-08	Asked of all respondents except pregnant respondents. "Obese" includes all three BMI categories of obesity. Each of the obese categories is associated with progressively higher health risk.
Disability	Activity Limitation	Participation and activity limitation (Sometimes or often)	Derived by Statistics Canada from a series of questions on activity limitation at home, at school, at work and other transportation of leisure activities.	CCHS 2007-08	Population who reported being limited in selected activities (home, school, work and other activities) because of a physical condition, mental condition or health problem which has lasted or is expected to last 6 months or longer.
Determinants of Health	Health Behaviour	Current smoker, daily	Derived by Statistics Canada from a series of questions on smoking.	CCHS 2007-08	Population who reported being a current smoker. "Daily smoker" refers to those who reported smoking cigarettes every day.
		Current smoker, daily or occasional	Derived by Statistics Canada from a series of questions on smoking.	CCHS 2007-08	Population who reported being a current smoker combining daily and occasional. "Occasional smokers" refers to those who reported smoking cigarettes occasionally, including former daily smokers who now smoke occasionally.
		Heavy drinking (5 or more drinks on one occasion, 12 or more times a year)	How often in the past 12 months have you had five or more drinks on one occasion? Never, Less than once a month, Once a month, 2 to 3 times a month, Once a week, More than once a week	CCHS 2007-08	Asked of respondents who reported taking a drink in prior 12 months: Population who reported having 5 or more drinks on one occasion, at least once a month in the past year.

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
	Employment and Working Conditions	Unemployment Rate	Unemployed: Those who reported they did not work last week and were not absent from a job or business. "In the past four weeks, did you do anything to find work?" Yes	Labour Force Survey August 2010	The unemployment rate is the number of unemployed persons aged 15 and older expressed as a percentage of the labour force aged 15 and older. The unemployment rate for a particular group is the number of unemployed in that group expressed as a percentage of the labour force for that group. The labour force consists of people who are currently employed, and people who are unemployed but were available to work in the reference week and had looked for work in the past 4 weeks.
	Income & Wealth	Low income (below LIM: Low Income Measure)	Derived by VAC from number of people living in the household, total household income during the year ending December 31, 2009 and corresponding LIM thresholds published by Statistics Canada for 2008 inflated to 2009.	Statistics Canada Survey of Labour and Income Dynamic 2008	Population whose before-tax household incomes (or personal income if only one person in the household) fall below the Low Income Measure by household size. For the STCL, the before-tax Low Income Measure (LIM) for a household size of four persons for 2008 (\$42,378) as published in Statistics Canada Catalogue no. 75F0002M No. 005, was inflated to 2009 (income year reported in STCL) and converted to other household sizes using the formula provided by the same publication. The source of the general population comparison is a special tabulation from the Statistics Canada 2008 Survey of Labour and Income Dynamic for the working population whose before-tax household income is below the before-tax LIM.
		Satisfaction with finances (satisfied or very satisfied)	How satisfied are you with your financial situation? very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied	--	Population who reported being satisfied or very satisfied with their financial situation.
	Education	Post secondary graduate (age25-54)	Derived by VAC using What is the highest certificate, diploma or degree that you have completed? and age at survey	Census 2006	Population aged 25 to 54 who have obtained a post-secondary certificate, diploma, or degree. The source for the general population is the 2006 Census (20% sample).
	Stress/Coping	High mastery	Derived by VAC using seven questions on mastery. For example "You have little control over the things that happen to you." strongly agree, agree, neither agree nor disagree, disagree, strongly disagree	--	Mastery measures the extent to which individuals believe that their life-chances are under their control. Mastery scores are derived from seven questions related to mastery each with a scale of five. Higher scores indicate superior mastery. The highest score being 35. Low mastery if ≤ 7 (Lee et al 2010), high if ≥ 23 (Stephens et al 2000).

Core Concept	Indicator Group	Indicator	Question(s) ^A	Comparator	Definition
		Satisfaction with job or main activity (satisfied or very satisfied)	How satisfied are you with your job or main activity? very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied	--	Population who reported being satisfied or very satisfied with their job or main activity.
		Sense of community belonging (Very strong or somewhat strong)	How would you describe your sense of belonging to your local community? Would you say it is...? very strong, somewhat strong, somewhat weak, very weak	CCHS 2007-08	Population who reported being their sense of belonging to their local community as being very strong or somewhat strong. Research shows a high correlation of sense of community-belonging with physical and mental health.
		Suicide Ideation			
		Adjustment to civilian life (moderately or very easy)	In general, how has the adjustment to civilian life been since you were released from the Canadian Forces? very difficult, moderately difficult, neither difficult nor easy, moderately easy, very easy	--	Population who reported that a moderately easy or very easy adjustment to civilian life since being released from the Canadian Forces.
	Social Support	Low social support	Derived by VAC from series of 19 questions on social support. For example, "How often is each of the following kinds of support available to you if you need it: ... someone to help you if you were confined to bed?" none of the time, a little of the time, some of the time, most of the time, all of the time	--	Low social support was a scale derived from 19 questions on social support. The scores range from 19 to 95 with a higher score indicating greater social support. Low social support included the population with a score of less than or equal to 74 (Schopflocher, 2002)
	Accessibility	Insurance for prescription medications	Do you have insurance that covers all or part of the cost of your prescription medications? Yes, No	--	Population who reported having insurance that covers all or part of the cost of prescription drugs.
		Insurance for dental expenses	Do you have insurance that covers all or part of the cost of your dental expenses? Yes, No	--	Population who reported having insurance that covers all or part of dental expenses.
		Insurance for eye glasses	Do you have insurance that covers all or part of the cost of eye glasses or contact lenses? Yes, No	--	Population who reported having insurance that covers all or part of the cost of eye glasses or contact lenses.
		Regular medical doctor	Do you have a regular medical doctor?	CCHS 2007-08	Population who reported that they have a regular medical doctor.

Note: A. MacLean et al (2010a).