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Correlates of Mental Health Problems in Canadian Armed Forces Veterans – 2013 Life After Service Survey

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Mental Health Findings from the 2013 Life After Service Survey

Executive Summary

This document is the third and last in a series initiated in 2014 to comprehensively analyze the mental health findings from the 2013 *Life After Service Studies* survey (LASS 2013). The LASS 2010 and 2013 surveys were the first in-depth looks of the well-being of CAF Veterans (former CAF members) living in the general Canadian population. The surveys used large samples of Veterans who were released from service from 1998 and identified using the Department of National Defence Human Resources Database. The LASS 2010 survey included Regular Force (RegF) Veterans who were released in 1998-2007, and the LASS 2013 survey included RegF Veterans who were released in 1998-2012 and Primary Reserve Force (ResF) Veterans who were released in 2003-2012. The goal of this body of work is to provide evidence to inform policy, programming and services aimed at enhancing and maintaining the well-being of CAF Veterans.

The first of the three reports from this project covered findings from descriptive analyses of the mental health findings. That report was an in-depth analysis of the prevalence of mental health indicators and identification of characteristics of subgroups in whom the unadjusted odds of self-reported diagnosed mental health conditions were higher (Thompson et al. 2015).

The second report described a method for combining three brief mental health measures used in LASS 2013 into a composite measure of “*mental health problems*” (MHPs): self-reported diagnosed conditions, the K10 measure of psychological distress and the PC-PTSD primary care screener for posttraumatic stress disorder (Thompson et al. manuscript in submission).

This third and final report completes the 2014 plan for the analysis of LASS 2013 mental health data by reporting on multivariable regression analysis of the mental health problems findings in LASS 2013 using the new composite MHPs measure. The objectives were to (1) assess the relative importance of factors associated with mental health problems in recent-era CAF Veterans using multivariable regression modelling; (2) assess the association of MHPs with difficult adjustment to civilian life adjusting for factors at the time of the survey using multivariable regression modelling; and (3) identify implications for policy, programming, services and further research.

The conceptual framework for this project is based on the domains of global well-being concept (Thompson et al. 2013). Global well-being is measured subjectively and objectively across the seven key domains of employment or other meaningful activity, finances, health, life skill/preparedness, social integration, housing and physical environment, and cultural and social environment. Global well-being in each domain fluctuates across the life course in response to determinants from all the domains, including policies, programs and services. The theory states that well-being has “multidimensional” influences. For example, that well-being in terms of health is influenced by employment, finances, social support, life skills, physical environment and social environment. Similarly, that well-being in terms of employment or other meaningful activity is influenced by health and the other well-being domains.

Main Findings and Implications

The table below summarizes main findings and related implications in two areas: policy, programs and services on the one hand, and further research on the other. There are implications for both population health and individual care. The findings in this report inform further analysis of the LASS 2013 survey data to provide greater insight into the mental health and well-being of CAF Veterans and inform researchers planning new studies to close gaps in knowledge of mental health in Veterans.

The findings cluster into key themes:

- Well-being multidimensionality. The univariable and multivariable analyses confirm that mental health problems and difficulty in adjustment to civilian life are associated with multiple, inter-related domains of well-being. A key implication for policy, programs and services is that attention to multiple domains is necessary rather than focus on only one at a time.
- Avoiding siloes. This observation comes from finding associations between determinants of well-being, with two key implications: (1) addressing both physical health and mental health rather than one or the other, and (2) focusing policy and program development more inclusively than only one domain of well-being without considering interactions with other domains.
- Screening. The analyses identified risk indicators marking subgroups in whom mental health problems or difficult adjustment to civilian life are more common. These findings can be used to refine screening systems.
- Targeting limited resources. The risk indicators can be used to target limited mental health resources to subgroups with the greatest needs.
- Understanding mental health problems in CAF Veterans. The findings will be of value to policy and program developers and service providers by providing insights into mental health problems in CAF Veterans who were released from service since 1998.
- Paradigm shift from “medical release”. Self-reported difficult adjustment to civilian life was strongly associated with mental health problems regardless of the type of release from service. This important finding shifted focus from only the medically released to more broadly including all with mental health problems, regardless of type of release.

Implications of mental health findings from LASS 2013 for Regular Force and deployed Reserve Force Veterans who released since 1998.

Finding	Implications for Policy, Programs, Services	Implications for Research
While a majority of these Veterans had no significant mental health problems (symptoms or diagnosed conditions), 39% did. About a fifth (22%) had mild to moderate mental health problems and about an eighth (16%) had severe ones.	Supports provision of a hierarchy of services to meet the broad range of needs across degrees of severity of mental health problems in the Veteran population.	There is need for research on the longitudinal natural history of mental health problems across the transition to life after service.
The 39% prevalence of mental health <i>problems</i> is larger than the previously reported 24% with diagnosed mental health <i>conditions</i> .	Informs and supports the ongoing development of mental health services and well-being supports for CAF Veterans.	The use of brief symptom measures together with measures of diagnosed conditions provides clearer picture of mental health problems.
Mental health problems were associated with a variety of socioeconomic, military, health and disability characteristics.	Supports the multidimensional provision of services and VAC’s domains of well-being approach.	Need for further research on the determinants of mental health during adjustment to civilian life.

Finding	Implications for Policy, Programs, Services	Implications for Research
Mental health <i>problems</i> (diagnosed conditions and subthreshold or undiagnosed symptoms) were not associated with male or female sex but, in prior analyses, the odds of self-reported diagnosed mental health <i>conditions</i> were 55% greater in women than men (Thompson et al. 2015).	Together with research in civilian populations, it is possible that male Veterans might be less likely to seek diagnosis and treatment for their mental health symptoms than females.	Further work is need on gender differences in the determinants of mental health problems and treatment-seeking.
Mental health problems were most likely in the middle age groups centered 40-49 years in all regression models, as in analyses of other LASS well-being indicators including difficult adjustment to civilian life, disability and suicidal ideation.	Points to the need for programs targeting mental health in middle-aged Veterans. At this age, Veterans released from service in mid-career are dealing with multiple stressors in multiple well-being domains: employment, finances, raising families and emerging chronic physical health conditions.	Additional work is needed on the determinants of mental health problems in these working-age Veterans during adjustment to civilian life, and impacts of MHPs in other domains of their well-being.
Chronic physical health conditions and chronic pain were consistently associated with mental health problems. Furthermore, 84% of those with mental health problems and 90% of those with diagnosed mental health conditions also had chronic physical health conditions.	Reinforces (again) the importance of breaking down siloes between mental and physical health care and attending to both when they co-occur.	There are important knowledge gaps in the complex causality issues for co-occurring physical and mental health problems. Longitudinal research studies are required that follow CAF members through MCT into later life.
Chronic pain was associated with mental health problems independently of chronic physical conditions, although the strength of association attenuated when adjusting for socioeconomic factors and physical conditions.	Chronic pain in these Veterans has complex associations with factors in multiple domains of well-being, including both physical and mental health problems. Requires treatment and recovery supports from multiple domains.	There are complex, incompletely understood causality factors for chronic pain, and more work is required to find effective and safe treatments.
Most releasing CAF members are of working age and seek employment in the workforce. There was a strong unadjusted association between not being employed and having mental health problems.	Chronic mental and physical health problems and related impairments play roles in unemployment and precarious employment and need to be considered in programming to support well-being in the employment domain.	Causality can be bidirectional: having MHPs can make it difficult for a person to get or keep a job, but difficulty getting or keeping a job can exacerbate or trigger MHPs.

Finding	Implications for Policy, Programs, Services	Implications for Research
<p>The association between low income and mental health problems persisted in the models until the life stress, life satisfaction, mastery and social support variables were added. Hypothesis: Veterans are more able to handle low income if not distressed or impacted in other domains of well-being, unless the low income state persists and becomes a determinant of poorer well-being in other domains.</p>	<p>This finding reinforces the importance of subjective well-being (distress) in those with low income. Suggests the importance of addressing determinants of mental health across multiple well-being domains to reduce stress and improve sense of mastery (control over one's life).</p>	<p>The relationships between low income, mental health problems and factors in other well-being domains remain unclear. Test the hypothesis that easing stressors in other well-being domains and improving a sense of mastery improves mental health.</p>
<p>Adding rank removed the association between low education and mental health problems. However, rank and education were correlated: most NCMs had less than university degree education attainment while most commissioned officers had university degrees.</p>	<p>It is well known in civilian studies that lower socioeconomic status is associated with health problems, and there are socioeconomic differences between lower and higher ranks. This finding informs both screening and tailoring services to different subgroups of Veterans.</p>	<p>While there is evidence of socioeconomic gradients in health among military ranks in other countries, the issue has not been well studied in this country.</p>
<p>Prior LASS analyses demonstrated an association between NCM rank and chronic physical health conditions. In this study, NCM rank at release was associated with higher unadjusted odds of mental health problems but the association with rank disappeared when adjusting for physical conditions, chronic pain and socioeconomic factors.</p>	<p>This finding suggests that having physical health problems +/- chronic pain and socioeconomic disadvantages explains the association of rank with mental health problems, supporting programming that addresses multiple determinants of well-being.</p>	<p>The complex interrelated roles of mental health, physical health and socioeconomic factors in well-being require further study in CAF Veterans, with a view to understanding how best to support well-being in this population.</p>
<p>Army service had higher odds of mental health problems than Navy or Air Force service.</p>	<p>Useful in screening for supports.</p>	<p>Review of published studies of serving CAF member well-being and longitudinal studies across transition would help to identify life course factors associated with mental health specific to the three service elements.</p>
<p>High life stress, poor life satisfaction, low mastery and low social support were all associated with mental health problems and when added to the models diminished the strengths of association with other factors.</p>	<p>This finding suggests that screening to identify those in distress would assist in targeting limited resources.</p>	<p>The bidirectional causality between mental health and these factors remains unclear, particular with respect to the efficacy of interventions such as enhancing mastery.</p>

Finding	Implications for Policy, Programs, Services	Implications for Research
Self-reported difficult adjustment to civilian life was strongly associated with mental health problems regardless of type of release from service.	The prior focus on the medically released should be broadened to include those who were not medically released. Informs refinement of the transition interview and risk assessment procedures.	It is unclear why self-reporting difficult adjustment to civilian life was so strongly associated with mental health problems.
Self-reported difficult adjustment to civilian life was associated with risk indicators across multiple domains of well-being, including at least health, employment, finances and social integration.	Informs screening to target programs and services for those more likely to experience difficult adjustment, including the transition interview. In conjunction with other sources of information, this finding suggests that attention to well-being across multiple domains, particularly mental health and its determinants, is likely to factor in successful military-civilian transition outcomes.	The difficult adjustment question requires further quantitative and qualitative validation in order to understand what respondents are considering when they answer the question.
Self-reported difficult adjustment to civilian life was associated with all adult age groups less than 60. Our hypothesis is that adults less than 60 are more likely than younger and older people to be dealing with multiple stresses simultaneously, for example raising families, education/career challenges, financial challenges, and emerging chronic physical health problems.	Informs development of good transition and post-transition supports for Veterans of working age who are more likely to experience difficulty adjusting to civilian life.	Longitudinal studies would help to inform understanding of factors that contribute to easy or difficult transitions to civilian life.

Interpretation Guidance

The findings in this report describe factors associated with mental health problems in CAF Veterans.

Study strengths:

- Objective identification of former CAF members to construct the sampling frame, using the DND human resources database.
- Use of self-report measures common to Canadian general population studies.
- Use of the new composite mental health problem measure extends understanding of mental health in these Veterans by identifying subgroups with self-reported diagnosed mental health conditions across a range of symptom levels, and mental health symptoms beyond those who report diagnosed conditions.
- The multivariable regression analyses account for the joint effects of several factors together in assessing associations with mental health problems (controls for confounding).
- The use of ordinal regression modelling enables understanding of associations across a range of severity mental health problems and degrees of difficulty in adjustment to civilian life rather than just presence/absence.
- The LASS surveys include Veterans living in the general population who are not using VAC services, in addition to those who are.

Study limitations:

- These findings apply to the population as a whole, not necessarily to individuals. A factor with low prevalence or low odds of mental health problems could be highly significant for some individuals.
- Be cautious about drawing conclusions about the presence of "risk" and "protective" factors. LASS 2013 was a point-in-time, cross-sectional survey, therefore causal conclusions cannot be made from this study alone, including the effects of military service or DND/CAF/VAC programs on Veterans' later life courses. The study identifies "risk indicators" (factors describing subgroups in whom mental health problems are more common) but not necessarily "risk factors" (factors that cause mental health problems).
- The adjusted regression models depend on available data. Although this allows for identifying potential confounding in associations between measured factors and mental health problems or difficult adjustment to civilian life, there is always the possibility that important factors were not measured and therefore not included in the models.
- Findings cannot be generalized to all Veterans because the study included only those who released in 1998-2012 (Regular Force) and 2003-2012 (deployed Reserve Force).

Conclusions en matière de santé mentale découlant de l'Enquête sur la vie après le service militaire 2013

Sommaire

Ce document est le troisième et le dernier d'une série entamée en 2014 pour analyser en profondeur les conclusions en matière de santé mentale tirées de l'*Enquête sur la vie après le service militaire* (EVASM 2013). Les enquêtes menées dans le cadre de l'EVASM 2010 et 2013 constituaient les premières études poussées sur le bien-être des vétérans des FAC (anciens membres des FAC) vivant dans la population canadienne. Les enquêtes faisaient appel à de grands échantillons de vétérans libérés du service militaire depuis 1998 et recensés à l'aide de la base de données des Ressources humaines de la Défense nationale. L'enquête menée dans le cadre de l'EVASM 2010 visait les vétérans de la Force régulière libérés de 1998 à 2007, et celle de l'EVASM 2013 visait les vétérans de la Force régulière libérés de 1998 à 2012 et ceux de la Première réserve libérés de 2003 à 2012. L'ensemble de ces travaux a pour but de fournir des données probantes qui serviront à l'établissement de politiques, de programmes et de services destinés à améliorer et à maintenir le bien-être des vétérans des FAC.

Le premier des trois rapports de ce projet portait sur les conclusions des analyses descriptives sur la santé mentale. Ce document se voulait une analyse en profondeur de la prévalence des indicateurs de problèmes de santé mentale et de la détermination des caractéristiques propres à des sous-groupes parmi lesquels les probabilités non ajustées d'avoir des problèmes de santé mentale diagnostiqués déclarés volontairement s'étaient révélées supérieures (Thompson et coll. 2015).

Le deuxième rapport faisait état de la méthode utilisée pour combiner trois brèves mesures de la santé mentale utilisées dans l'EVASM 2013 à une mesure composite des « *problèmes de santé mentale* » (PSM) : les affections diagnostiquées déclarées volontairement par le vétéran, les niveaux de détresse psychologique selon le mesure K10 et le test de dépistage du trouble de stress post-traumatique (TSPT) en soins primaires (Thompson et coll. manuscrit à soumettre).

Le troisième et dernier rapport vient compléter le plan d'analyse des données de 2014 sur la santé mentale de l'EVASM 2013 dans un rapport d'analyse de régression multivariable des conclusions de l'EVASM 2013 effectuée à l'aide de la nouvelle mesure composite des problèmes de santé mentale (PSM). Les objectifs étaient : 1) d'évaluer les facteurs d'importance relative associés aux PSM chez les vétérans de notre ère, à l'aide d'un modèle de régression à plusieurs variables; 2) d'évaluer l'association des PSM à la difficulté d'adaptation à la vie civile au moment de l'enquête, grâce à un modèle de régression à plusieurs variables; 3) de cerner les répercussions sur les politiques, les programmes, les services et d'autres projets de recherche.

Le cadre conceptuel de ce projet repose sur les domaines du bien-être global (Thompson et coll. 2013). Le bien-être global est mesuré de manière subjective et objective dans les sept domaines clés de l'emploi ou d'une autre activité importante, des finances, de la santé, des compétences de vie et d'état de préparation, de l'intégration sociale, du logement et de l'environnement physique, et du milieu social et culturel. Le bien-être global dans chacun des domaines peut fluctuer au cours de la vie en fonction de déterminants propres à ces domaines, notamment les programmes, les politiques et les services. La théorie nous dit que le bien-être est tributaire d'influences « multidimensionnelles ». À titre d'exemple, le bien-être sur le plan de la santé est influencé par l'occupation d'un emploi, les finances, le soutien social, les compétences de vie, l'environnement physique et le milieu social. De la même façon, ce bien-être sur les plans de l'emploi et d'autres activités importantes est influencé par la santé et d'autres domaines du bien-être.

Principales conclusions et répercussions

Le tableau qui suit résume les principales conclusions et les répercussions connexes dans deux secteurs : les politiques, les programmes et les services d'une part et, d'autre part, la poursuite des travaux de recherche. Ces conclusions ont des répercussions sur la santé de la population et la prestation de soins. Les conclusions du présent rapport contribuent à une autre analyse des données de l'enquête de l'EVASM 2013 afin de donner une meilleure idée de la santé mentale et du bien-être des vétérans des FAC et d'informer les chercheurs qui prévoient de nouvelles études visant à combler le manque de connaissances sur la santé mentale des vétérans.

Les conclusions sont regroupées par thèmes :

- L'aspect multidimensionnel du bien-être. Les analyses à variable unique et à plusieurs variables confirment que les problèmes de santé mentale et la difficulté d'adaptation à la vie civile sont associés à de multiples domaines du bien-être reliés entre eux. La principale répercussion sur les politiques, les programmes et les services est que l'attention à porter aux multiples domaines s'avère nécessaire plutôt que de se limiter à un domaine à la fois.
- Éviter les cloisonnements. Cette observation découle des associations découvertes entre les déterminants du bien-être, assorties de deux répercussions clés : 1) traiter la santé physique et la santé mentale ensemble plutôt que séparément; 2) axer l'élaboration de politiques et de programmes sur une démarche globale, plutôt que de tenir compte d'un seul domaine de bien-être, les interactions avec d'autres domaines n'étant pas prises en considération.
- Dépistage. Les analyses définissent des indicateurs de risque signalant les sous-groupes ayant en commun des problèmes de santé mentale ou des difficultés d'adaptation à la vie civile. Ces conclusions peuvent servir à peaufiner les systèmes de dépistage.
- Cibler les ressources limitées. Les indicateurs de risque peuvent servir à cibler les ressources limitées en santé mentale pour les sous-groupes ayant les besoins les plus criants.
- Comprendre les problèmes de santé mentale chez les vétérans des FAC. Les conclusions seront utiles aux concepteurs de politiques et de programmes, ainsi qu'aux fournisseurs de services, car elles leur permettront de comprendre les problèmes de santé mentale chez les vétérans des FAC qui sont libérés depuis 1998.
- Changement de paradigme de la libération pour raisons médicales à tout type de libération. Les difficultés d'adaptation à la vie civile déclarées volontairement étaient fortement associées aux problèmes de santé mentale, tout type de libération confondu. Cette conclusion importante a recentré l'attention qui était portée uniquement sur la libération pour raisons médicales vers une approche englobant tous les problèmes de santé mentale, quel que soit le type de libération.

Répercussions des conclusions en matière de santé mentale découlant de l'EVASM 2013 sur les vétérans de la Force régulière et les vétérans déployés de la Force de réserve libérés depuis 1998.

Conclusions	Répercussions sur les politiques, les programmes et les services	Répercussions sur la recherche
Si la majorité de ces vétérans ne présentaient pas de problèmes de santé mentale (PSM) importants (symptômes ou affections diagnostiqués), 39 % avaient des problèmes de santé mentale. Environ un cinquième (22 %) présentait des PSM légers ou modérés, et environ un huitième (16 %) avait de graves PSM.	Assurer la prestation d'une gamme de services visant à répondre à des besoins de divers degrés de gravité associés aux problèmes de santé mentale chez les vétérans.	Des recherches doivent être effectuées sur l'histoire naturelle longitudinale des problèmes de santé mentale pendant la transition à la vie après le service.
Chez les 39 %, la prévalence des <i>problèmes</i> de santé mentale est supérieure à celle rapportée antérieurement (24 %), avec <i>affections</i> de santé mentale diagnostiquées.	Assurer et appuyer l'élaboration continue en matière de services de santé mentale et de mesures de soutien du bien-être pour les vétérans des FAC.	L'utilisation de brèves mesures de symptômes combinées à des mesures des affections diagnostiquées nous donne une meilleure idée des problèmes de santé mentale.
Les problèmes de santé mentale étaient associés à diverses caractéristiques socioéconomiques, militaires, de la santé et de l'invalidité.	Assurer la prestation de services multidimensionnelle et appuyer les domaines d'ACC liés à une approche en matière de bien-être.	Nécessité de faire d'autres recherches sur les déterminants de la santé mentale pendant l'adaptation à la vie civile.
Les <i>problèmes</i> de santé mentale (affections diagnostiqués et symptômes sous-liminaires ou non diagnostiqués) n'étaient pas associés aux hommes ou aux femmes; mais, dans les études antérieures, les probabilités liées à des <i>affections</i> de santé mentale diagnostiquées déclarées volontairement étaient de 55 % plus élevées chez les femmes que chez les hommes (Thompson et coll. 2015).	De concert avec les recherches sur les populations civiles, il est possible que les vétérans de sexe masculin soient moins portés que les femmes à obtenir un diagnostic et des traitements pour leurs symptômes de problèmes de santé mentale.	D'autres travaux doivent être effectués sur les différences entre les hommes et les femmes relativement aux déterminants des problèmes de santé mentale et l'obtention de traitements.
Les problèmes de santé mentale étaient le plus susceptibles de survenir chez les groupes de 40 à 49 ans dans tous les modèles de régression, tout comme dans les analyses d'autres indicateurs de bien-être d'EVASM, notamment la difficulté d'adaptation à la vie civile, les invalidités et les idées suicidaires.	Les données indiquent la nécessité d'élaborer des programmes visant la santé mentale des vétérans de 40 à 49 ans. À cet âge, les vétérans libérés à la mi-carrière doivent composer avec de multiples facteurs de stress dans de nombreux domaines liés au bien-être : emploi, finances, élever une famille et apparition de problèmes de santé physique chroniques.	D'autres travaux doivent être effectués sur les déterminants des problèmes de santé mentale chez ces vétérans en âge de travailler pendant la période d'adaptation à la vie civile, ainsi que sur les répercussions des PSM dans d'autres domaines liés au bien-être.

Conclusions	Répercussions sur les politiques, les programmes et les services	Répercussions sur la recherche
Les problèmes de santé physique chroniques et la douleur chronique étaient constamment associés aux problèmes de santé mentale. De plus, 84 % de ceux qui avaient des problèmes de santé mentale et 90 % de ceux qui avaient des affections de santé mentale diagnostiquées avaient également des affections de santé physique chroniques.	Vient renforcer (encore une fois) l'importance d'abattre les cloisons entre les soins de santé physique et les soins de santé mentale et de s'occuper des deux types de problèmes lorsqu'ils se manifestent.	Il y a un manque de connaissances notable au sujet des liens complexes de cause à effet dans le cas des problèmes de santé mentale et de santé physique concomitants. Des études longitudinales s'imposent si l'on veut suivre les membres des FAC plus tard dans leur vie.
La douleur chronique était associée à des problèmes de santé mentale indépendamment des affections physiques chroniques, bien que la pertinence de cette association se soit atténuée lors de l'ajustement des facteurs socioéconomiques et des affections physiques.	La douleur chronique chez ces vétérans comporte des associations complexes, accompagnée de facteurs dans de multiples domaines du bien-être, y compris des problèmes de santé mentale et de santé physique. Nécessite des traitements et des mesures de rétablissement provenant de multiples domaines.	Il existe des facteurs de cause à effet complexes et mal compris à l'égard de la douleur chronique; d'autres travaux doivent être effectués pour trouver des traitements sécuritaires et efficaces.
La plupart des membres libérés des FAC sont en âge de travailler et de rechercher un emploi. On constate une forte association non ajustée entre ne pas avoir d'emploi et avoir des problèmes de santé mentale.	Les problèmes chroniques de santé physique et de santé mentale et les déficiences connexes ont des répercussions sur le chômage et les emplois précaires; ils doivent être pris en considération lors de l'élaboration de programmes visant à assurer le bien-être dans le domaine de l'emploi.	Les liens de cause à effet peuvent être bidirectionnels : le fait d'avoir des PSM peut rendre difficile la recherche d'emploi pour une personne; à l'inverse, la difficulté de se chercher un emploi et de le conserver peut aggraver ou déclencher des PSM.
L'association entre le faible revenu et les PSM persistait dans les modèles jusqu'à ce que les variables du stress de la vie, du degré de satisfaction face à la vie, du rôle de la prise en charge et du soutien social aient été ajoutées. Hypothèse : Les vétérans sont davantage en mesure de composer avec un faible revenu s'ils n'éprouvent pas de détresse ou si leur situation n'a pas de répercussion sur d'autres domaines du bien-être, à moins que de vivre avec un faible revenu ne devienne persistant et s'avère un déterminant d'un bien-être amoindri dans d'autres domaines.	Les conclusions viennent étayer l'importance d'un bien-être subjectif (détresse) chez ceux qui ont un faible revenu. Elles donnent à penser qu'il est important d'aborder les déterminants de la santé mentale dans les multiples domaines du bien-être, afin de réduire le stress et d'améliorer le sentiment de prise en charge de sa vie.	Les liens entre le faible revenu, les problèmes de santé mentale et les facteurs dans d'autres domaines du bien-être sont nébuleux. Il faudrait vérifier l'hypothèse selon laquelle la réduction des facteurs de stress dans d'autres domaines du bien-être et le sentiment de prise en charge de sa vie améliorent la santé mentale.

Conclusions	Répercussions sur les politiques, les programmes et les services	Répercussions sur la recherche
Le fait d'ajouter le grade éliminait l'association entre le faible niveau de scolarité et les PSM. Toutefois, le grade et le niveau de scolarité ont été mis en corrélation : la plupart des militaires de rang (MR) comptaient un niveau d'études inférieur au niveau universitaire, tandis que la plupart des officiers commissionnés détenaient un diplôme universitaire.	Dans les études sur les civils, il est reconnu qu'un faible statut socioéconomique est associé à des problèmes de santé, et qu'il existe des différences socioéconomiques entre les grades inférieurs et les grades supérieurs. Ces conclusions donnent davantage de détails sur le dépistage et l'adaptation des services pour les différents sous-groupes de vétérans.	L'on sait qu'il existe des gradients socioéconomiques en matière de santé au sein des grades militaires d'autres pays; toutefois, cette question n'a pas fait l'objet d'études poussées au Canada.
Les analyses antérieures de l'EVASM ont démontré qu'il existait une association entre les grades des MR et les affections de santé physique chroniques. Dans cette étude, le grade des MR à la libération était associé à des probabilités non ajustées élevées de PSM; cependant, l'association aux grades avait disparu lors de l'ajustement des affections physiques, de la douleur chronique et des facteurs socioéconomiques.	Cette conclusion donne à penser que le fait d'avoir des problèmes de santé physique +/- de la douleur chronique et des désavantages socioéconomiques expliquerait l'association entre les grades et les PSM. Cette conclusion appuie la nécessité d'élaborer des programmes visant à répondre à de multiples déterminants du bien-être.	Les rôles complexes et interreliés de la santé mentale, de la santé physique et des facteurs socioéconomiques du bien-être nécessitent d'autres études sur les vétérans des FAC. Ces études devraient viser à comprendre comment l'on peut mieux assurer le bien-être de cette population.
Dans l'armée, les probabilités en matière de PSM étaient supérieures à celles recensées dans la marine ou les forces aériennes.	Cette information est utile dans la détermination des mesures de soutien.	Une analyse des études publiées sur le bien-être des membres des FAC et des études longitudinales pendant la transition pourraient nous permettre de cerner les facteurs du parcours de vie associés à la santé mentale propres aux trois éléments de service.
Un niveau de stress élevé dans la vie, un faible taux de satisfaction face à la vie, de prise en charge et de soutien social ont été associés aux PSM; ajoutés aux modèles, ils diminuaient la force de l'association avec d'autres facteurs.	D'après cette conclusion, le dépistage visant à identifier ceux qui sont en détresse contribuerait à cibler les ressources limitées.	Le lien de cause à effet bidirectionnel entre la santé mentale et ces facteurs est nébuleux, en particulier quant à l'efficacité des interventions telles l'amélioration de la prise en charge.
La difficulté d'adaptation à la vie civile déclarée volontairement était fortement associée aux PSM, peu importe le type de libération.	L'accent mis sur les libérations pour raisons médicales devrait être élargi aux libérations pour d'autres raisons. Contribue à peaufiner les entrevues de transition et les procédures d'évaluation des risques.	Il est difficile de comprendre pourquoi la difficulté d'adaptation à la vie civile déclarée volontairement a été si fortement associée aux PSM.

Conclusions	Répercussions sur les politiques, les programmes et les services	Répercussions sur la recherche
<p>La difficulté d'adaptation à la vie civile déclarée volontairement était associée aux indicateurs de risque dans de multiples domaines du bien-être, y compris au moins la santé, l'emploi, les finances et l'intégration sociale.</p>	<p>Contribue au dépistage et à cibler les programmes et les services destinés à ceux qui sont le plus susceptibles d'avoir des difficultés d'adaptation, y compris l'entrevue de transition. De concert avec d'autres sources d'information, cette conclusion donne à penser que l'attention accordée au bien-être dans de multiples domaines, en particulier la santé mentale et ses déterminants, jouerait un rôle pour une transition réussie de la vie militaire à la vie civile.</p>	<p>La question touchant la difficulté d'adaptation nécessite d'être mieux validée des points de vue quantitatif et qualitatif, et ce, pour comprendre ce dont tiennent compte les participants lorsqu'ils répondent aux questions.</p>
<p>La difficulté d'adaptation à la vie civile déclarée volontairement était associée à tous les groupes d'âge adulte inférieurs à 60 ans. Notre hypothèse est que les adultes de moins de 60 ans sont plus susceptibles que les personnes plus jeunes et les personnes plus âgées de connaître diverses formes de stress en même temps (par exemple, élever une famille, enjeux liés aux études et à la carrière, enjeux financiers et problèmes de santé physique chroniques).</p>	<p>Contribue à l'élaboration de saines mesures de soutien à la transition et après la transition à l'intention des vétérans en âge de travailler qui sont plus susceptibles de connaître des difficultés d'adaptation à la vie civile.</p>	<p>Les études longitudinales pourraient permettre de comprendre les facteurs qui contribuent à une transition facile ou difficile à la vie civile.</p>

Guide d'interprétation

Les conclusions de ce rapport décrivent les facteurs associés aux problèmes de santé mentale chez les vétérans des FAC.

Forces de l'étude

- L'identification objective des anciens membres des FAC afin de constituer un cadre d'échantillonnage à l'aide de la base de données des Ressources humaines du MDN.
- L'utilisation de mesures de déclaration volontaire communes aux études de la population canadienne.
- L'utilisation de la nouvelle mesure composite des problèmes de santé mentale permet de mieux comprendre la santé mentale chez les vétérans, grâce à la détermination de sous-groupes ayant des affections de santé mentale diagnostiquées déclarées volontairement dans un éventail de symptômes, ainsi que les symptômes de santé mentale au-delà de ceux qui ont signalé des affections diagnostiquées.
- Les analyses de régression à variables multiples tiennent compte des effets conjoints de plusieurs facteurs lors de l'évaluation des associations avec les problèmes de santé mentale (facteurs de confusion).
- L'utilisation d'un modèle de régression ordinal permet de mieux comprendre les associations à divers degrés de gravité de problèmes de santé mentale et les degrés de difficulté d'adaptation à la vie civile plutôt que d'en signaler uniquement la présence ou l'absence.
- Les enquêtes de l'EVASM visent les vétérans qui vivent dans la population générale et qui ne reçoivent pas de services d'ACC, en plus de ceux qui en reçoivent.

Limites de l'étude

- Ces conclusions s'appliquent à l'ensemble de la population et pas nécessairement à des individus. L'établissement d'un facteur de faible prévalence et de faibles probabilités de problèmes de santé mentale pourrait être de haute importance pour certains individus.
- La prudence est de mise lorsque l'on tire des conclusions sur la présence de facteurs de « risque » et de « protection ». L'EVASM 2013 se voulait une enquête transversale ponctuelle; par conséquent, l'on ne peut tirer de conclusions causales à partir de cette étude uniquement, notamment sur les effets du service militaire ou des programmes MDN/FAC/ACC sur le parcours de vie des vétérans. L'étude établit des « indicateurs de risque » (facteurs décrivant des sous-groupes ayant des problèmes de santé mentale communs) mais pas nécessairement des « facteurs de risque » (facteurs causant des problèmes de santé mentale).
- Les modèles de régression ajustés sont tributaires des données disponibles. Même s'ils permettent de cerner les facteurs de confusion possibles dans les associations effectuées entre les facteurs mesurés et les problèmes de santé mentale ou les difficultés d'adaptation à la vie civile, il est toujours possible que des facteurs importants n'aient pas été mesurés et, par conséquent, n'aient pas été inclus dans les modèles.
- Les conclusions ne peuvent être généralisées à tous les vétérans, l'étude ne visant que ceux qui ont été libérés de 1998 à 2012 (Force régulière) et de 2003 à 2012 (vétérans déployés de la Force de réserve).

Mental Health Findings from the 2013 Life After Service Survey

Introduction

The 2010 and 2013 *Life After Service Studies* (LASS) were the first in-depth surveys of the well-being of CAF Veterans (former CAF members) living in the general Canadian population (MacLean et al. 2010, Thompson et al. 2011a, 2012b, 2013a, 2014a, 2014b, 2014c, 2015, 2016, VanTil et al. 2014a). The surveys used large samples of Veterans who were released from service from 1998 and identified objectively using the Department of National Defence Human Resources Database. An important strength of these surveys is that they included Veterans living in the general population who were not participating in Veterans Affairs Canada (VAC) programs, in addition to those who were. The LASS 2010 survey included Regular Force (RegF) Veterans who were released in 1998-2007, and the LASS 2013 survey included RegF Veterans who were released in 1998-2012 and Primary Reserve Force (ResF) Veterans who were released in 2003-2012. The surveys were undertaken to inform policy, programming and services aimed at supporting the well-being of CAF members establishing in civilian life after release from service.

In 2014, a three-step plan was approved to conduct in-depth analyses of the mental health findings in the LASS 2013 dataset to document the extent and correlates of mental health problems in these recent-era Veterans.

First, initial analyses began with estimates of the prevalence of mental health problems based on brief self-report measures available in the LASS datasets, a key first step in developing an understanding of mental health in a population. Self-reported mental health problems¹ including self-rated mental health, self-reported diagnoses of chronic mental health conditions (mood disorders, anxiety disorders and posttraumatic stress disorder or PTSD), PTSD symptoms and symptoms of psychological distress were found to be more prevalent in RegF and deployed (Class C) ResF Veterans than in the general Canadian population after adjusting for age and sex differences (Thompson et al. 2012a and 2015). Mental health problem prevalences were not higher in non-deployed (Class B) ResF Veterans, who were much younger and also had much lower prevalences of physical health conditions (40% had released as recruits). The prevalences of mental health problems were higher in these recent-era Veterans than in the whole Veteran population surveyed in the 2003 Canadian Community Health Survey which was dominated by earlier-era Veterans, and prevalences Veterans were higher than in contemporary serving population (Thompson et al. 2016a). Hypotheses which could explain why mental health problems could be more prevalent in recent-era CAF Veterans were explored by Thompson et al. (2016a).

Next, descriptive and univariable logistic regression methods were used find *risk indicators*² that identify subgroups in whom mental health conditions are more prevalent (Thompson et al. 2015). Prior to adjusting for confounding, mental health conditions were found to be more likely in RegF Veterans with a variety of socioeconomic and military characteristics and with chronic physical health conditions, chronic pain, prior traumatic brain injury, activity limitations, life and work stress, dissatisfaction with life, main activity or finances and suicidal ideation (Thompson et al. 2011b, 2015).

At that point, much had been learned from descriptive and univariable analyses about the prevalence and

¹ “Mental health *problems*” in this report refers to both diagnosed conditions and psychological symptoms, and “mental health *conditions*” refers to self-reported chronic mental health conditions.

² *Risk indicators* simply identify subgroups in whom the outcome is more likely, while *risk factors* are characteristics of subgroups where the characteristics for which there is evidence of a causal association with mental health problems (Patten 2015). Causality cannot be concluded from cross-sectional surveys since they only provide point-in-time snapshots, even when adjusting for confounding.

range of mental health problems and factors associated with them. But the analyses had not used multivariable methods to sort out which factors were associated with mental health problems while accounting for other factors (controlling for confounding). Prior LASS analyses have identified significant associations between mental health conditions or self-rated mental health and the other measures including chronic pain (Vandenkerkhof et al 2015), poor mental health-related quality of life (Hopman et al. 2015) and past-year suicidal ideation (Thompson et al. 2011b, 2014c). The analyses consistently demonstrated the importance of co-occurring chronic physical health conditions in considering the mental health findings. For example, physical conditions were associated with suicidal ideation independently of (though more weakly than) mental conditions; and suicidal ideation was concentrated in those with comorbidity of mental and physical conditions (Thompson et al. 2014c). In another analysis, comorbidity of mental and physical conditions was much more strongly associated with disability measured as activity limitations than either type of condition alone (Thompson et al. 2014b). In all these multivariable analyses, mental health measures were not the dependent variable.

Second, the initial descriptive analysis found that the five brief mental health measures used in LASS 2013 captured overlapping segments of the population (Thompson et al. 2015). So next we developed a method for combining three of the measures (self-reported diagnosed mental conditions, the Kessler K10 measure of psychological distress and the PC-PTSD primary care screener for PTSD) into a single, composite measure to paint a more comprehensive picture of mental health problems (MHPs) in CAF Veterans (Thompson et al. manuscript in submission). There are two key advantages of the composite measure. First, it captures both those with psychological distress or PTSD symptoms without a diagnosed mental health condition and those with diagnosed conditions who do not have significant psychological distress. Second, the composite measure is ordinal, providing information about MHPs across three levels of severity: 61% had no/little MHPs, 22% had mild/moderate MHPs and 16% had severe MHPs. Risk indicators for MHPs were identified using univariable regression analysis, but the analysis (a) did not assess for associations of MHPs with socioeconomic and military characteristics, and (b) did not adjust for confounding using multivariable analysis. Risk indicators for MHPs identified in the LASS 2013 dataset using univariate analysis included physical health comorbidity, disability, stress, social support, suicidality and service use (Thompson et al. manuscript in submission).

In univariate analyses where we did not adjust simultaneously for confounding effects of multiple variables, MHPs were found to be strongly associated with self-reported difficult adjustment to civilian life (Thompson et al. manuscript in submission). The unadjusted odds of reporting diagnosed mental *conditions* were 10.5 times higher in those reporting difficult adjustment, a strong association (Thompson et al. 2015). Significant associations were also found for chronic physical health conditions and activity limitations. Similarly, the unadjusted odds of having severe MHPs in those with difficult adjustment using the composite measure were 10.9 times higher than in those with no/little or mild/moderate MHPs (Thompson et al. manuscript in submission). Prior multivariable analysis of factors associated with difficult adjustment to civilian life in the LASS datasets considered only variables available in the DND database at the time of release from military service rather than at the time of the survey (MacLean et al. 2014). That study found that difficult adjustment to civilian life was associated with medical release. However, of the 24% of RegF Veterans who reported difficult adjustment, only 40% had been released medically, while the majority (60%) had been released for other reasons, including voluntary release, and many of those also had chronic physical and mental health conditions. The observation that the prevalence of individual measures of mental health problems were more prevalent in recent-era Veterans than the general Canadian population, prior-era Veterans and possibly the serving population raises the concern that stresses encountered during military-civilian transition might have a role to play in the excess of mental health problems in this population. Assessing the association of MHPs with difficult adjustment in the context of factors collected at the time of the survey would clarify the relative importance of the association between MHPs and self-reported difficult adjustment.

To summarize, most of the analysis of LASS 2013 mental health data that was planned in 2014 has been reported:

1. A technical report (Thompson et al. 2015) that gives prevalences of mental health problems using individual brief survey measures including for the first time a comparison of the prevalence of PTSD in Veterans to the general Canadian population, demonstrates overlaps in subgroups using individual mental health measures, and univariable analysis identifying risk indicators associated with self-reported diagnosed chronic mental health conditions. The findings were also reported at the Canadian Institute of Military Veteran Health Research forums in 2014 and 2015, and in a peer-reviewed journal (Thompson et al. 2016).
2. A paper (Thompson et al. manuscript in submission) describing the derivation and validation of the composite MHPs measure and univariable correlations using regression. The findings were reported at the Canadian Institute of Military Veteran Health Research forums in 2015.

This technical report completes the third part of the 2014 plan for the analysis of LASS 2013 mental health data by reporting on multivariable analysis of the mental health problems findings in LASS 2013 using the new composite MHPs measure. The objectives are to:

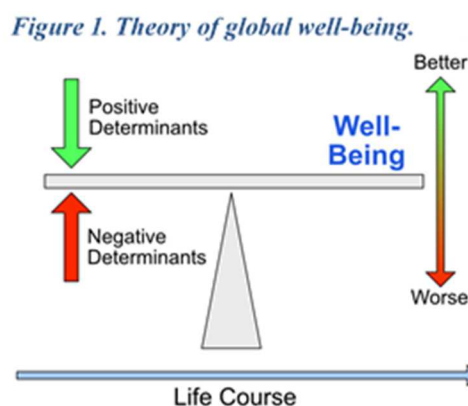
1. Assess, on a population basis, the relative importance of factors associated with the presence and absence of mental health problems in recent-era CAF Veterans using multivariable regression modelling;
2. Assess the association of MHPs with difficult adjustment to civilian life in the context of other factors measured in LASS 2013 using multivariable regression modelling; and
3. Identify implications for policy, programming, services and further research.

The goal of this body of work is to provide evidence to inform policy and programming aimed at enhancing and maintaining the mental health and well-being of CAF Veterans.

Methods

Well-Being Conceptual Framework

The conceptual framework for this analysis is the domains of global well-being concept (Thompson et al. 2013). Global well-being is measured subjectively and objectively across the seven key domains of employment or other meaningful activity, finances, health, life skill/preparedness, social integration, housing and physical environment, and cultural and social environment. Global well-being in each domain fluctuates across the life course in response to determinants from all the domains (Figure 1), including policies, programs and services. The theory states that well-being has “multidimensional” influences. For example, that well-being in terms of health is influenced by employment, finances, social support, life skills, physical environment and social environment. Similarly, that well-being in terms of employment or other meaningful activity is influenced by health and the other well-being domains.



Sampling Frames and Sample

Details of the survey methodology, sampling frame and definitions of the measures used in the study are available in two VAC technical reports (Thompson et al. 2014a, VanTil et al. 2014b). LASS 2013 was a cross-sectional, computer-assisted telephone interview survey and data linkage study of well-being (health, disability, and the determinants of health) of CAF Veterans conducted by Statistics Canada. The survey sampled former deployed and non-deployed RegF personnel who were released from service between 1998 and 2012 (n = 3,658, response rates 64.7-72.4% across the rank strata, final sample of 2,622 representing a population of 55,061) and former Primary ResF personnel who had deployed in support of operations (Class C Reserve service) and were released between 2003 and 2012 (n = 1,441, response rate 70.3%, final sample 1,013 representing a population of 3,416). The survey sampled Veterans living in the general population including those who were not participating in VAC programs, but excluded those who were still serving or living in institutions, remote areas or outside Canada. Veteran status and sociodemographic and military characteristics were obtained from a Department of National Defence human resources database. Self-reported data were obtained using questions adopted from the Canadian Community Health Survey. Ethical approval was provided by Statistics Canada and participants provided informed consent.

For the purposes of this study:

- Veteran means a former (ex-service) CAF member with any length of service.
- VAC client³ means a Veteran who was receiving benefits from VAC as of March 2013.

Sample

RegF and deployed ResF Veterans were combined in this study. **Table 1** compares RegF Veterans with deployed ResF Veterans. RegF Veterans were older, had a lower proportion of women, more often had lower education, had longer lengths of service, had more often released as officer cadets or recruits, and were less often in the Army. The two groups had similar marital status and income adequacy profiles. RegF Veterans more often had chronic physical and mental health conditions and were more likely to be participating in VAC programs. However deployed ResF Veterans (Class C) were more like RegF Veterans than non-deployed (Class B) Veterans (Thompson et al. 2014a).

Table 1. Characteristics of the study population.

Characteristic	Sample size and Weighted Population Percent			
	Deployed (Class C) Reserve Veterans	RegF Veterans	Combined	
Total	922, 100.0%	2329, 100.0%	3251, 100.0%	
Age: Mean (Range)	40.2 (20-67)	43.9 (18-78)	43.7 (18-78)	
Age	60-78	87, 8.4%	364, 9.5%	451, 9.5%
	50-59	150, 15.2%	808, 28.2%	958, 27.5%
	40-49	184, 18.7%	583, 25.1%	767, 24.8%
	30-39	366, 40.6%	352, 20.8%	718, 21.9%
	18-29	135, 17.1%	221, 16.3%	357, 16.4%

³ “Client” includes Veterans who in the past had received a disability benefit (disability award or pension) owing to ongoing eligibility for health care benefits. It would not include a Veteran who had participated in a program in the past and was no longer in receipt of benefits, however only a very small number of VAC clients would be in that category: 98% of CAF VAC clients had disability benefits in March 2013 (VAC Quarterly Fact Sheet) and of the remainder some would have been in receipt of other benefits when the data linkage was made.

Characteristic		Sample size and Weighted Population Percent		
		Deployed (Class C)		
		Reserve Veterans	RegF Veterans	Combined
Sex	Male	703, 76.6%	2039, 86.6%	2742 86.0%
	Female	219, 23.4%	290, 13.4%	509, 14.0%
Marital status	Married, commonlaw	673, 71.8%	1839, 73.8%	2512 73.7%
	Widowed, separated, divorced	60, 6.2%	226, 10.0%	286, 9.8%
	Single, never married	189, 22.0%	264, 16.1%	453, 16.5%
Education level attained	University degree	283, 30.1%	590, 16.5%	873, 17.3%
	Post-secondary not university degree	376, 40.9%	707, 35.9%	1083, 36.2%
	High school	234, 25.9%	917, 42.6%	1151, 41.6%
	Less than high school	28, 3.1%	110, 5.1%	138, 4.9%
Income adequacy quintile	Highest 5	145, 16.5%	454, 16.3%	599, 16.3%
	4	188, 21.5%	451, 19.4%	639, 19.5%
	3	180, 20.6%	426, 18.9%	606, 19.0%
	2	190, 21.9%	433, 21.0%	623, 20.9%
	Lowest 1	170, 19.6%	422, 24.4%	592, 24.1%
Length of service	≥ 20 years	225, 21.6%	1461, 47.5%	1,686, 46.0%
	10-19	352, 36.4%	228, 11.5%	580, 13.0%
	2-9	338, 41.1%	304, 19.7%	642, 20.9%
	< 2	7, 0.9%	336, 21.3%	343, 20.1%
Last military rank	Senior officer	78, 7.4%	330, 7.7%	408, 7.6%
	Junior officer	90, 9.7%	304, 7.6%	394, 7.7%
	Cadet	0, 0.0%	141, 4.2%	142, 4.0%
	Senior NCM	204, 20.4%	844, 25.1%	1048, 24.8%
	Junior NCM	536, 60.8%	566, 42.9%	1102, 43.9%
	Private/Recruit	39, 1.6%	144, 12.6%	157, 12.0%
Service branch	Air Force	67, 6.9%	819, 29.9%	886, 28.5%
	Navy	117, 12.7%	409, 16.3%	526, 16.1%
	Army	738, 80.4%	1101, 53.8%	1839, 55.4%
Chronic diagnosed physical conditions		594, 65.6%	1669, 71.2%	2263, 70.8%
Comorbid chronic physical conditions	0	300, 28.8%	602, 34.4%	902, 29.2%
	1	299, 29.7%	673, 33.9%	972, 30.0%
	2	157, 21.2%	509, 17.1%	666, 20.9%
	3 or more	138, 20.2%	487, 14.6%	625, 19.9%
Chronic pain or discomfort		268, 28.1%	809, 33.8%	1077, 33.5%
Chronic diagnosed mental health conditions		160, 17.1%	507, 23.8%	667, 23.4%
VAC clients		170, 16.9%	900, 35.5%	1070, 34.4%

Note: Physical health conditions include TBI effects (yes/maybe) and exclude chronic pain.

Variables

Mental Health Problem Composite Measure

In this analysis, the “mental health problem” construct encompasses both diagnostic categories and subthreshold and undiagnosed symptom states associated with distress and functional difficulties that may warrant intervention. Three brief survey measures of mental health problems available in the LASS 2013 dataset (**Table 2**) were combined to produce a MHP composite measure (**Table 3**). The MHP composite has three categories reflecting ordinal degrees of severity: *no/little* MHPs, *mild/moderate* MHPs and *severe* MHPs and has been shown to have validity Thompson et al. (manuscript in submission).

Table 2. Measures of health problems used in the MHPs composite measure.

Mental Health Measure	Construct Measured	Variable Type	Time Frame
1. Diagnosed mental health condition (MHC)⁴	3 questions about mood disorder, anxiety disorder or PTSD that has lasted or is expected to last 6 months or more, diagnosed by a health professional, self-reported.	Categorical: Yes/No	Currently
2. Kessler’s K10	Psychological distress; 10 questions.	Continuous: 0-40. Categorical: various methods used in the literature	Past month
3. Primary Care PTSD screener (PC-PTSD)	4 questions about PTSD symptoms.	Categorical: possible PTSD = 3 or 4 criteria, possible subthreshold PTSD = 1-2 criteria.	Past month

Table 3 shows how the component measures were combined into the composite MHPs measure. First, respondents with either K10 scores of 20-40 or 3-4 PC-PTSD criteria were assigned to the severe MHPs category, regardless of whether they reported having a diagnosed mental condition. Those with no diagnosed mental health condition, a K10 score of 0-9 and no PC-PTSD criteria were assigned to the no/little category. Finally, all others were categorized as “mild/moderate”. Those with intermediate K10 scores of 10-19 were assigned to the mild/moderate category unless they had 3-4 PC-PTSD criteria. Similarly, those who endorsed 1 or 2 PC-PTSD factors were assigned to the mild/moderate MHPs category unless they had K10 criteria for the severe category.

Table 3. Composite MHPs variable categories. See text for categorization rules.

Component Measure	Degree of Mental Health Problem		
	No or Little	Moderate	Severe
MHC	No	No or Yes	No or Yes
K10 Score	0-9 Likely well	10-19 Moderate	20-40 Severe
PC-PTSD (number of criteria)	0	1 or 2	3 or 4

MHC = Self-reported diagnosed mental health condition.

K10 = Kessler’s 10-item measure of psychological distress.

PC-PTSD = Primary care posttraumatic disorder screener.

Severe = K10 score 20-40 or 3-4 PC-PTSD criteria, then No/little = No MHC, and K10 score 0-9, and no PC-PTSD criteria, then Mild/moderate = all others.

Ease of Adjustment to Civilian Life

Ease of adjustment to civilian life was assessed with the question, “*In general, how has the adjustment to civilian life been since you were released to civilian life from the Canadian Forces?*” with five options grouped into three categories: *easy* (moderately or very easy), *neither* and *difficult* (moderately or very difficult).

⁴ “We are interested in conditions diagnosed by a health professional and are expected to last or have already lasted 6 months or more”, respondents were asked, “Do you have a mood disorder such as depression, mania, dysthymia or bipolar disorder?”, “Do you have an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder?” and “Do you have post-traumatic stress disorder (PTSD)?”.

Socioeconomic and Military Characteristics

Age at survey, sex, military rank at release, years of service, service branch (Army, Navy, Air Force) and service component (RegF, Primary ResF) were ascertained from the Department of National Defence database. Second lieutenants and naval equivalents were included in the junior officer category for this analysis (in more recent analyses we are including them with Officer Cadet/Naval Cadet ranks). The recruit category included only Private (Recruit) and Ordinary Seaman (Recruit). Other characteristics were self-reported using questions from Statistics Canada surveys. Income adequacy was measured using quintiles of the ratio of household income to Statistics Canada's 2009 Low Income Measure for number of people.

Physical Health and Chronic Pain

Physical health was measured as groups of chronic physical health conditions taken from the Canadian Community Health Survey, using the same preamble as for mental health conditions: musculoskeletal (arthritis or back problems excluding fibromyalgia); cardiovascular (high blood pressure, heart condition, or effects of stroke); respiratory (asthma, emphysema, chronic bronchitis or chronic obstructive pulmonary disease); gastrointestinal (intestinal or stomach ulcers, or bowel disorder such as Crohn's disease, ulcerative colitis, irritable bowel syndrome or bowel incontinence); hearing problem; obesity; diabetes; cancer; and neurological (migraine, Alzheimer's disease, effects of traumatic brain injury yes and maybe). Chronic pain was assessed with questions from the Health Utilities Index, beginning with the preamble "*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*" followed by "*Are you usually free of pain or discomfort?*" Chronic pain was not included in the aggregate measure of chronic physical health conditions.

Life Stress, Life Satisfaction, Mastery and Perceived Social Support

- Life stress was assessed with "*Thinking about the amount of stress in your life, would you say that most days are...?*" with five options ranging from not at all stressful to extremely stressful. Life stress was assessed with "*Thinking about the amount of stress in your life, would you say that most days are...?*" with five options ranging from not at all stressful to extremely stressful.
- Life satisfaction was assessed with the question "*Using a scale of 0 to 10 where 0 means very dissatisfied and 10 means very satisfied, how do you feel about your life as a whole right now?*" (Score 0-10, converted to a 5-point scale: very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied).
- Mastery was assessed 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, combined into a numerical score and categorized in tertiles which yield cutoffs of 0-18 for low, 19-21 for moderate and 22-28 for high.
- Social support was measured with the 10-item Social Provisions Scale (Caron and Liu 2010) producing scores ranging 10 to 40. Those with scores of 29 and lower were considered to have low perceived social support (Thompson et al. 2015).

Statistical Analysis

General

Weighted population estimates and associated 95% confidence intervals (CI) were expressed as percentages calculated from individual respondent weights provided by Statistics Canada to account for stratification and non-response. Odds ratios were calculated from weighted data by ordinal logistic

regression using Stata/IC version 13 with update 2014 of the gologit2 module (Williams 2006). The module conducted tests of proportionality of odds for no/little symptoms versus moderate or severe and for no/little or moderate symptoms versus severe at the autofit $p = 0.01$ level, calculating different ORs if the proportionality assumptions were not met. Analyses were conducted on respondents with complete data. Confidence intervals were calculated with Taylor series linearization. The number of records in regression model samples missing data were 3.9-14.2% for models 1-4c (highest in the models with individual physical health conditions) and 3.0-6.7% in models 5a-5c.

Multivariable logistic regression models were run in series using varying logical blocks of variables. The blocks were: (1) socioeconomic and military characteristics, (2) comorbidity of chronic physical health conditions, and (3) measures of stress, satisfaction, mastery and social support. Models were calculated using varying combinations of variables within those blocks.

Choice of Covariates

Covariates were chosen based on prior findings of factors associated with mental health problems in our analyses and in the literature, and correlation tests.

Table 4 shows the results of correlation tests conducted to assess covariate independence. Pairs that did not have low correlation were explored further.

Disability, suicidal ideation and health-related quality of life

Disability, suicidal ideation and health-related quality of life (SF-12) were not used as covariates in this modelling. Prior LASS 2010 multivariable modelling has already demonstrated associations between mental health conditions and these outcomes (Thompson et al. 2014b,c and Hopman et al. 2015) and they are correlated with chronic physical health conditions and chronic pain, which were priority covariates.

Age and Years of Service

In previous work with LASS data we found that *age* and *years of service* are very strongly correlated (Pearson's coefficient 0.90, $p < 0.01$, Thompson et al. 2014c), so they were not used together in multivariable models.

Table 4. Tests of correlation.

	Sex	Marital Status	Education	Income Adequacy	Rank	Branch	Labour Force	Number of PHC	Life Stress	Life Satisfaction	Mastery	Social Support
Age	0.116 p=0.000	0.298 p=0.000	-0.073 p=0.000	0.075 p=0.000	-0.416 p=0.000	0.234 p=0.000	0.339 p=0.000	0.257 p=0.000	-0.094 p=0.000	0.038 p=0.008	-0.077 p=0.000	-0.031 p=0.043
Sex		0.061 p=0.003	0.074 p=0.000	0.035 p=0.447	0.108 p=0.000	0.071 p=0.000	0.057 p=0.001	0.017 p=0.812	0.083 p=0.000	0.042 p=0.058	0.039 p=0.091	0.011 p=0.529
Marital Status			0.072 p=0.000	0.117 p=0.000	0.230 p=0.000	0.088 p=0.000	0.050 p=0.017	0.081 p=0.000	0.050 p=0.003	0.096 p=0.000	0.097 p=0.000	0.165 p=0.000
Education				0.224 p=0.000	0.607 p=0.000	0.057 p=0.002	0.155 p=0.000	-0.161 p=0.000	0.095 p=0.000	-0.111 p=0.000	0.131 p=0.000	0.090 p=0.000
Income Adequacy					-0.267 p=0.000	0.092 p=0.000	0.297 p=0.000	-0.073 p=0.000	0.012 p=0.435	-0.165 p=0.000	0.193 p=0.000	0.146 p=0.000
Rank						0.179 p=0.000	0.169 p=0.000	-0.024 p=0.100	0.029 p=0.052	0.083 p=0.000	-0.104 p=0.000	-0.078 p=0.000
Branch							0.078 p=0.000	0.047 p=0.030	0.053 p=0.001	0.024 p=0.444	0.045 p=0.011	0.030 p=0.235
Labour Force								0.221 p=0.000	0.153 p=0.000	0.235 p=0.000	0.204 p=0.000	0.140 p=0.000
Number of PHC									0.112 p=0.000	0.261 p=0.000	-0.235 p=0.000	-0.193 p=0.000
Life Stress										0.224 p=0.000	-0.248 p=0.000	-0.178 p=0.000
Life Satisfaction											-0.372 p=0.000	-0.380 p=0.000
Mastery												0.336 p=0.000

Ordinal (Kendall's Tau B) – age/education, age/income, age/rank, age/number of PHC, age/life stress, age/life satisfaction, age/mastery, age/social support, education/income, education/rank, education/number of PHC, education/life stress, education/life satisfaction, education/mastery, education/social support, income/rank, income/number of PHC, income/stress, income/satisfaction, income/mastery, income/social support, rank/number of PHC, rank/stress, rank/satisfaction, rank/mastery, rank/social support, number of PHC/stress, number of PHC/satisfaction, number of PHC/mastery, number of PHC/social support, stress/satisfaction, stress/mastery, stress/social support, satisfaction/mastery, satisfaction/social support, mastery/social support

Nominal (Cramer's V) – age/sex, age/marital status, age/branch, age/labour, sex/marital status, sex/education, sex/income, sex/rank, sex/branch, sex/labour, sex/number of PHC, sex/life stress, sex/life satisfaction, sex/mastery, sex/social support, marital status/education, marital status/income, marital status/rank, marital status/branch, marital status/labour, marital status/number of PHC, marital status/life stress, marital status/life satisfaction, marital status/mastery, marital status/social support, education/branch, education/labour, income/branch, income/labour, rank/branch, rank/labour, branch/labour, branch/number of PHC, branch/stress, branch/satisfaction, branch/mastery, branch/social support, labour/number of PHC, labour/stress, labour/satisfaction, labour/mastery, labour/social support.

Labour Force Participation

Prior unadjusted regressions identified moderately strong to strong associations between MHPs and the not-employed LFP categories (Thompson et al. 2015). While we would have liked to use labour force participation (LFP) as a covariate in the multivariable models, we found reason to exclude this variable to simplify modelling in the present study.

There was some degree of correlation between age and LFP (Cramer's $V = 0.34$), and in initial multivariable modelling we obtained results that were difficult to explain when we included LFP. So we ran some regression models adjusting for age and LFP only to look more closely at these two variables (**Table 6**):

- **In model 1**, which does not have interaction terms, the AORs for MHPs varied across the age and LFP categories. But, because this model assumes homogeneity, then the AOR for MHPs if not employed would be 3.4 regardless of age. And vice-versa: among those aged 30-39 the OR for MHPs would be 3.0 regardless of employment status. To test the homogeneity assumption, we added interaction terms to the model.
- **In model 2**, all the AORS for age and LFP became not significant when the interaction terms were added to model 1, and there was a different LFP AOR for each age category. This means that there was not homogeneity of association, and that effect measure modification was present. (Note: Stata would not converge in model 2: we had to force it.)
 - In other words, the *effect* of not being employed on the odds of MHPs appears not to be constant with age (**Table 7**).
 - Similarly, ORs for MHPs vary across the two categories of LFP when age is held constant (**Table 8**). This way of looking at it says that the *effect* of age on the odds of MHPs varies by employment status and is greatest in those aged 40-49.

A likely explanation for this finding of effect measure modification in age x LFP is that the “not employed” LFP category contains sub-groups that vary in size by age. For example, retirement is more common in those aged 60+ than younger Veterans.

Given these insights, we elected not to include LFP in the multivariable models, opting instead to use age in the modelling for the present study.

However, the LASS 2013 data show that being not employed is a risk indicator for MHP. The strong unadjusted association between LFP and MHPs is very important to consider in further analysis of the LFP data, and in policy/programming planning. This cross-sectional finding does not imply causality or direction of causality, and we know from clinical experience and prior research that causality is bidirectional: having a MHPs can make it difficult for a person to get or keep a job, but difficulty getting or keeping a job can also exacerbate or trigger MHP.

Table 6. Results of regressions adjusting for age and labour force participation.

Variable	ORs for Mental Health Problems (ordinal, 3 categories)		
	UOR	Adjusted Model 1	Adjusted Model 2 ¹
Age <30	1.0	1.7**	0.7
30-39	1.6**	3.0***	1.1
40-49	2.1***	4.1***	1.3
50-59	1.5**	2.3***	1.1
60+	Ref.	Ref.	Ref.
LFP Employed	Ref.	Ref.	Ref.
Not Employed	2.7***	3.4***	0.96
Interaction:			
Age<30xLFP	Not used	Not used	3.7**
Age30-39xLFP	Not used	Not used	7.0*
Age40-49xLFP	Not used	Not used	9.5*
Age50-59xLFP	Not used	Not used	3.7*

¹Stata did not want to converge for model 2; we had to force it.

Table 7. ORs for MHPs when not employed, by age.

LFP	Age category	OR for MHPs when not employed ⁵
Not employed	<30	0.96 x 3.7
Not employed	30-39	0.96 x 6.1
Not employed	40-49	0.96 x 9.5
Not employed	50-59	0.96 x 1.9
Not employed	60+	0.96

Table 8. ORs for MHPs when not employed, by age.

Age Category	LFP	OR for MHPs in that age category*
<30	Employed	0.7
	Not employed	0.7 x 3.7 = 2.6
30-39	Employed	1.1
	Not employed	1.1 x 6.1 = 6.7
40-49	Employed	1.3
	Not employed	1.3 x 9.5 = 12.4
50-59	Employed	1.1
	Not employed	1.1 x 1.9 = 2.1
60+	Employed	1.0
	Not employed	1.0 x 0.96 = 0.96

*Calculated using the method described in “Deciphering Interactions in Logistical Regression” (Statistical Consulting Group online).

⁵Calculated using the method described in “Deciphering Interactions in Logistical Regression” (Statistical Consulting Group online http://www.ats.ucla.edu/stat/stata/seminars/interaction_sem/interaction_sem.htm viewed 28 June 2016).

Rank and Education

Education and rank were moderately correlated (Kendall's Tau B = 0.6). Most officers had university education, while most NCMs had other than university education (Thompson et al. 2015). When rank was added to initial multivariable models, education was no longer significantly associated with mental health problems. For this reason, we dropped education in later models in favour of rank, which is of primary interest in this military population.

Rank and Age

The relationships between rank, age and other covariates are complex. Age and rank are correlated both within NCM ranks and within commissioned officer ranks including officer cadets. Other analyses have shown differences in the two rank groups with respect to socioeconomic, health and other well-being characteristics (e.g., Thompson et al. 2015). We combined ranks into two categories (officer and NCM) for multivariable modelling owing to the moderate correlation of rank with age (Kendall's Tau B -0.42, $p=0.000$) and because **Table 9** shows zero-n cells, which would have hampered detection of an association with rank while adjusting for other covariates.

Table 9. Weighted population estimates in age-rank cells (combined RegF and ResC).

Age Category	Rank at Release							Total
	Senior Officer	Junior Officer*	Cadet	Senior NCM	Junior NCM	Private	Recruit**	
<30	0.0%	2.2%	9.7%	0.0%	17.5%	16.6%	54.0%	100.0%
30-39	0.7%	8.1%	7.4%	2.4%	36.4%	15.5%	29.5%	100.0%
40-49	5.0%	9.7%	2.3%	25.0%	48.7%	2.9%	6.4%	100.0%
50-59	12.2%	7.1%	0.6%	48.2%	30.3%	1.0%	0.6%	100.0%
60+	30.5%	13.0%	0.3%	51.0%	5.2%	0.0%	0.0%	100.0%

*Included Second Lieutenant and naval equivalent rank.

**Recruit = Private (Recruit) and Ordinary Seaman (Recruit).

Chronic Physical Health Condition Comorbidity

In unadjusted regressions, the association of having a chronic physical health condition with MHPs was moderately strong (UOR = 3.5). However, the odds of MHPs increased with increasing degree of physical condition multimorbidity, and previous analysis of LASS data has shown that multimorbidity of 3 or more physical conditions was associated with problems such as disability and suicidal ideation (Thompson et al. 2014b, 2014c). For this reason, we used four categories of physical health condition comorbidity instead of presence/absence of physical conditions.

Adjustment to Civilian Life

We conducted ordinal logistic multivariable regression modelling using difficult adjustment to civilian life as the dependent variable to assess the relative importance of MHPs in the context of other covariates assessed at the time of the survey. Ease of adjustment to civilian life was assessed with a single question "In general, how has the adjustment to civilian life been since you were released from the Canadian Forces?" and five response options "very difficult, moderately difficult, neither difficult nor easy, moderately easy, very easy". The ordinal dependent variable for ease of adjustment combined the five categories into three: easy, neither and difficult. Elevated odds ratios indicate association with difficult adjustment. Five models were run: first with sociodemographic characteristics, then adding military characteristics, then adding physical health comorbidity, chronic pain and the composite MHP measure.

Disability (activity limitations) measures were not used in the regression models because we used the more direct health measures which are causally related to activity limitations. The UOR for difficult adjustment was 4.5 times higher in those with health-related activity limitations (sometimes or often) than in those with no limitations (p=0.000). The odds of difficult adjustment were 5.0 times higher in those needing help with a basic or instrumental activity of daily living than in those who did not (p=0.000).

Results and Discussion

Table 10 shows that most of the combined RegF and deployed ResF Veterans who released since 1998 had no/little MHPs (61%), some had mild/moderate MHPs (22%) and a smaller number had severe MHPs (16%).

Table 10 also gives population sizes for each of the categories of the variables used in the regression models by degree of MHPs. Use this table along with the regression findings (**Appendices**) to put the odds ratio findings into context. A given category might be strongly associated with MHPs but only affect a small number of Veterans, while a category with a weaker independent association might affect a large number.

Table 10. Population estimates for variables used in the regression models by degree of MHPs. LASS 2013, RegF and ResF combined.

Characteristic	Mental Health Problems (Percent of Whole Population)			Total	
	No/Little	Mild/Moderate	Severe		
Total	61.3	22.3	16.4	100.0	
Age	<30	11.7	3.2	1.7	16.6
	30-39	12.9	5.6	3.3	21.7
	40-49	13.2	5.5	6.2	24.9
	50-59	16.9	6.0	4.4	27.3
	60+	6.6	2.1	0.9	9.5
	Total	61.3	22.3	16.4	100.0
Sex	Male	53.1	18.8	14.0	85.9
	Female	8.2	3.5	2.4	14.1
	Total	61.3	22.3	16.4	100.0
Marital status	Married, common-law	47.6	15.6	10.5	73.7
	Widowed, separated, divorced	4.3	2.3	3.2	9.8
	Single, never married	9.3	4.4	2.8	16.5
	Total	61.3	22.3	16.4	100.0
Education level attained	Less than high school	2.6	1.4	1.0	5.0
	High school	25.5	8.8	7.4	41.6
	Post-secondary not degree	20.9	8.8	6.4	36.1
	University degree	12.3	3.3	1.6	17.3
	Total	61.3	22.3	16.4	100.0
Income adequacy (quintile)	Lowest 1	12.3	6.0	5.8	24.1
	2	12.0	4.7	4.2	20.9
	3	12.3	4.0	2.7	19.0
	Highest two: 4 & 5	24.9	7.4	3.7	36.0
	Total	61.5	22.1	16.4	100.0
Labour Force Participation	Employed	63.0	19.3	11.0	93.3
	Not Employed	3.1	2.2	1.4	6.7
	Total	66.1	21.5	12.4	100.0

Characteristic		Mental Health Problems (Percent of Whole Population)			Total
		No/Little	Mild/Moderate	Severe	
Last military rank	Senior officer	5.8	1.3	0.5	7.6
	Junior officer	4.5	1.3	0.7	6.6
	Cadet	3.9	1.1	0.2	5.1
	Senior NCM	14.7	5.8	4.3	24.8
	Junior NCM	24.3	10.3	9.2	43.9
	Recruit	8.1	2.5	1.4	12.0
	Total	61.3	22.3	16.4	100.0
Service element	Air Force	18.7	6.6	3.3	28.5
	Navy	10.4	3.2	2.5	16.2
	Army	32.2	12.5	10.6	55.3
	Total	61.3	22.3	16.4	100.0
Service Component	RegF	57.6	20.9	15.6	94.2
	Reserve Class C	3.6	1.4	0.8	5.8
	Total	61.3	22.3	16.4	100.0
Type of Release	Involuntary	3.7	1.8	1.3	6.8
	Medical	6.5	6.4	7.6	20.5
	Voluntary	37.1	10.6	5.4	53.1
	Retirement Age	3.7	0.7	0.3	4.7
	Service Complete	10.3	2.8	1.9	15.0
	Total	61.3	22.3	16.4	100.0
Comorbidity of Chronic Physical Conditions	0	23.3	4.6	1.5	29.4
	1	19.6	6.5	3.8	29.9
	2	10.5	6.2	4.3	21.0
	3 or more	7.2	5.1	7.4	19.7
	Total	60.6	22.4	17.0	100.0
CNS (includes TBI effects)	Yes	5.0	5.2	6.5	16.7
	No	56.3	17.1	9.9	83.3
	Total	61.3	22.3	16.4	100.0
Urinary incontinence	Yes	0.8	0.8	1.2	2.8
	No	59.7	21.8	15.7	97.2
	Total	60.5	22.6	16.9	100.0
Hearing problem	Yes	3.1	2.1	3.1	8.4
	No	59.0	19.9	12.8	91.6
	Total	62.1	22.0	15.9	100.0
Musculoskeletal	Yes	19.5	12.2	11.1	42.8
	No	41.8	10.2	5.2	57.2
	Total	61.4	22.4	16.3	100.0
Gastrointestinal	Yes	3.2	2.5	2.9	8.6
	No	58.3	19.7	13.4	91.4
	Total	61.6	22.1	16.3	100.0
Respiratory	Yes	3.5	1.5	2.1	7.1
	No	57.8	20.9	14.2	92.9
	Total	61.3	22.4	16.3	100.0
Obesity	Yes	14.2	5.6	6.1	25.8
	No	47.2	16.6	10.4	74.2
	Total	61.3	22.2	16.5	100.0
Cardiovascular	Yes	10.2	4.5	4.2	18.9
	No	51.1	17.8	12.2	81.1
	Total	61.3	22.3	16.4	100.0
Diabetes	Yes	3.0	1.4	1.1	5.5
	No	58.3	20.9	15.3	94.5
	Total	61.3	22.3	16.4	100.0
Cancer	Yes	0.8	0.5	0.2	1.6
	No	60.4	21.8	16.2	98.4
	Total	61.3	22.3	16.4	100.0

Characteristic	Mental Health Problems (Percent of Whole Population)			Total	
	No/Little	Mild/Moderate	Severe		
Chronic pain	Yes	13.5	9.4	10.3	33.3
	No	47.8	12.9	6.0	66.7
	Total	61.3	22.4	16.3	100.0
Life stress most days	Not at all or not very	28.2	6.0	1.9	36.1
	A bit	24.5	11.0	5.9	41.3
	Quite a bit or extremely	8.6	5.3	8.6	22.6
	Total	61.2	22.3	16.4	100.0
Satisfaction with life	Satisfied or very satisfied	59.5	18.4	8.2	86.2
	Neither	1.3	2.4	3.1	6.8
	Dissatisfied/very dissatisfied	0.5	1.5	5.0	7.0
	Total	61.3	22.3	16.4	100.0
Mastery	High	29.9	6.8	1.2	29.5
	Medium	22.9	6.4	3.4	32.7
	Low	8.7	9.1	11.7	37.8
	Total	61.4	22.2	16.4	100.0
Social Provisions Scale	Not low	3.5	4.8	6.9	15.2
	Low (score \leq 29)	58.7	17.3	8.8	84.8
	Total	62.2	22.1	15.7	100.0

Factors Associated with Mental Health Problems

Appendix Tables 1, 2 and 3: Unadjusted and adjusted odds ratios (UORs and AORs) of MHPs in 9 models:

Model 1: socioeconomic factors.

Model 2a: socioeconomic factors and rank 6 categories.

Model 2b: socioeconomic factors and rank 2 categories.

Model 3a: socioeconomic factors, rank 2 categories and service element.

Model 3b: socioeconomic factors, rank 2 categories, service element and physical health comorbidity.

Model 3c: socioeconomic factors, rank 2 categories, service element, physical health comorbidity, life stress, life satisfaction, mastery and social support.

Model 4a: socioeconomic factors, rank 2 categories and chronic physical health conditions.

Model 4b: socioeconomic factors, rank 2 categories, chronic physical health conditions and chronic pain.

Model 4c: socioeconomic factors, rank 2 categories, chronic physical health conditions and life stress, life satisfaction, mastery and social support.

Appendix Table 4: UORs using reverse reference categories.

Appendix Table 5: Risk indicators identified in adjusted models 1-4c.

Unadjusted Associations with MHPs

Table 11 summarizes the results of unadjusted regressions reported in **Appendix Tables 1-4**. Odds of MHPs were highest in ages 40-49, widowed/separated/divorced marital status, lower education, not employed, low household income adequacy, lower ranks (highest in junior and senior NCM ranks but also elevated in junior commissioned officer ranks) and Army element. Service component (Regular or

ResF) was not associated with MHP: the UOR for deployed ResF relative to RegF was 0.9 (0.8-1.1). This finding adds to the rationale for combining RegF and deployed ResF in this study.

Not surprisingly, odds were elevated for higher life stress, greater dissatisfaction with life, lower sense of mastery, and low social support.

Odds were elevated for all the chronic physical health conditions except diabetes and cancer, which are uncommon in young and middle-aged adults, so sample sizes might have been too small to detect an association but note the trend toward elevated odds of MHPs in those with these two conditions. Odds of MHPs were highest in those with CNS problems which included self-reported “effects of traumatic brain injury (TBI)”. We previously reported a strong association of self-reported diagnosed mental health conditions with reporting effects of TBI (UOR = 7.6, Thompson et al. 2015), consistent with other research showing a connection between prior TBI and both pre-military and later life mental health conditions (Lee et al. 2015). Odds were next highest in those with urinary incontinence, hearing problems and musculoskeletal conditions (arthritis or low back problems). UORs were also increasingly higher for increasing degrees of multimorbidity of co-occurrent chronic physical health conditions.

Also not surprisingly, the association between MHPs and chronic pain was moderately strong (UOR = 3.9). Chronic pain or discomfort is common in this population (Vandenkerkhof et al. 2015), and the relationships between chronic pain, mental conditions, physical conditions and related activity limitations are complex. Although chronic pain typically originates in physical disorders, there is a mental health dimension to chronic pain. In previous multivariate modelling of LASS 2010 findings, self-diagnosed mental health conditions were not associated with chronic pain in CAF RegF Veterans when adjusting for chronic musculoskeletal, gastrointestinal conditions and needing help with activities of daily living (VanDenKerkhof et al. 2015). In another LASS 2010 analysis, chronic pain/discomfort had the strongest association with health-related activity limitations (AOR = 10.9) followed by any mental health condition (AOR = 2.7) tied with musculoskeletal conditions (AOR = 2.6), and the combination of mental and physical conditions had a synergistically additive effect on the odds of activity limitations (Thompson et al. 2014b).

UORs for service utilization were reported in the paper describing derivation of the MHP composite measure (Thompson et al. manuscript in submission). Odds of MHPs were elevated for inpatient stays and consultations with all health care providers mentioned in the survey questions, unmet needs for health care, home care services and VAC client status. Several studies have demonstrated that many military personnel do not seek treatment for MHP, indicating a need for further research on modifiable barriers (Colpe et al. 2015). Much less is known about the extent of treatment-seeking and barriers to care in military Veterans, particularly CAF Veterans (Thompson et al. 2016).

Reversed Reference Categories

Table 11 shows the results of unadjusted regressions with reversed reference categories. UORs were significantly lower than 1.0 for married/common-law marital status, university degree, the top three quintiles of household income adequacy, senior officer rank, less than quite a bit of life stress, and less than dissatisfaction with life.

Table 11. Unadjusted odds ratios for MHPs.

Characteristic	Unadjusted MHPs UORs (95% C.I.)		
		Usual Reference Categories	Reverse Reference Categories
Age	<30	1.0 (0.7-1.4)	Ref.
	30-39	1.6** (1.2-2.2)	1.6**
	40-49	2.1*** (1.6-2.5)	2.1***
	50-59	1.5** (1.1-1.9)	1.5*
	60+	Ref.	1.0
Sex	Male	Ref.	0.9
	Female	1.1 (0.9-1.5)	Ref.
Marital status	Married, common-law	Ref.	0.74*
	Widowed, separated, divorced	2.5*** (1.9-3.4)	1.86**
	Single, never married	1.4* (1.0-1.7)	Ref.
Education level attained	Less than high school	2.2*** (1.5-3.3)	0.5***
	High school	1.6*** (1.3-2.1)	0.8
	Post-secondary not degree	1.8*** (1.5-2.3)	0.8
	University degree	Ref.	Ref.
Income adequacy (quintile)	Lowest 1	2.3*** (1.8-3.1)	Ref.
	2	2.0*** (1.5-2.6)	0.83
	3	1.3 (1.0-1.8)	0.57***
	4	1.1 (0.8-1.5)	0.48***
	Highest 5	Ref.	0.43***
Last military rank	Senior officer	Ref.	0.7*
	Junior officer	1.4* (1.1, 1.98)	1.0
	Cadet	0.9 (0.6, 1.4)	0.6*
	Senior NCM	2.2*** (1.7, 2.9)	1.5*
	Junior NCM	2.6*** (2.0, 3.5)	1.7**
	Recruit	1.5* (1.0, 2.3)	Ref.
Service element	Air Force	Ref.	0.9
	Navy	1.1 (0.8-1.4)	Ref.
	Army	1.4*** (1.2-1.8)	1.3*
Service Component	RegF	Ref.	--
	Reserve Class C	0.9 (0.8-1.1)	--
Comorbidity of chronic physical health conditions	0	Ref.	--
	1	0.5*** (0.4-0.6)	--
	2	1.9*** (1.4-2.4)	--
	3 or more	3.2*** (2.5-4.2)	--
		4.4*** (3.3-6.0)	--
Chronic physical conditions (excludes chronic pain)			
	Central nervous system	4.8*** (3.8-6.1)	--
	Urinary incontinence	3.9*** (2.4-6.4)	--
	Hearing problems	3.4*** (2.5-4.5)	--
	Musculoskeletal	3.3*** (2.7-4.0)	--
	Gastrointestinal	2.9*** (2.2-3.9)	--
	Respiratory	1.9*** (1.4-2.7)	--
	Obesity	1.6*** (1.3-1.9)	--
	Cardiovascular	1.5*** (1.2-1.9)	--
	Diabetes	1.3 (1.0-1.9)	--
	Cancer	1.3 (0.8-2.2)	--
Chronic pain (Ref. = no)		3.9*** (3.2-4.7)	--
Life stress most days	Not at all or not very	Ref.	0.2***
	A bit	2.5*** (2.0, 3.1)	0.4***
	Quite a bit or extremely	5.8*** (4.5, 7.6)	Ref.
Satisfaction with life	Satisfied or very satisfied	Ref.	0.04***
	Neither	8.4*** (5.9, 12.0)	.03***
	Dissatisfied/very dissatisfied	24.9*** (16.5, 37.7)	Ref.

Characteristic		Unadjusted MHPs UORs (95% C.I.)	
		Usual Reference Categories	Reverse Reference Categories
Mastery (Cutoffs based on tertiles)	High	Ref.	--
	Medium	1.6***(1.3-2.1)	--
		3.5***(2.2-5.6)	--
	Low	9.0***(7.0-11.6)	--
19.9***(13.1-30.2)		--	
Social Provisions Scale	Not low	Ref.	--
	Low (score ≤ 29)	7.4*** (5.7-9.5)	--

*p<0.05, **p<0.01, ***p<0.001 (Absence of asterisk indicates not significantly different from 1).

UOR (unadjusted odds ratio) same for moderate and high versus no/little and for high versus no/little and moderate except where shown.

Adjusted Associations with MHPs

Appendix Table 5 summarizes what happened in the series of adjusted models shown in **Appendix Tables 1-3** (models 1-4).

Age

The 40-49 year age group was persistently associated with MHPs in all models. The youngest and oldest age groups were least likely to have MHPs in all models. The middle age groups are most likely to be dealing with the stresses of careers and raising families at a time when chronic physical health conditions begin to accumulate.

Sex (Gender)

Sex was not a risk indicator for MHPs: sex was not associated with MHPs either in unadjusted univariate regression or any of the adjusted models. This might seem surprising, owing to the common finding in civilian studies that measures of adverse mental health are more common in women than men. However, the MHP composite is a summary measure that obscures complexities of the gender/mental health picture in Veterans. For example, the unadjusted odds of having self-reported diagnosed mental health conditions were higher in women in CAF RegF Veterans in this survey than men (UOR 1.6; Thompson et al. 2015). Further research could look at the odds of K10 psychological distress and criteria for possible PTSD using the PC-PTSD to see whether there were sex differences for those variables in the LASS 2013 dataset. In the 2002 CAF mental health survey of serving members, PTSD was more common in women, but women were less likely to be exposed to warlike trauma, disasters, assaultive violence, and witnessing trauma although they were more likely to be exposed to sexual trauma (Brunet et al. 2015). Finally, it is important also to recall that the sample size of women in this study was low owing to the high ratio of men to women in the Veteran population, restricting ability to detect differences between men and women.

Socioeconomic Characteristics

Not being in a marital or common-law relationship was associated with MHPs in all the models with one exception. In **model 3c**, single/never married was no longer associated with MHPs and the association with widowed/separated/divorced attenuated considerably when adjusting for life stress, life satisfaction, mastery and social support, all of which were significantly associated with MHPs.

Similarly, low income was associated with MHPs in all the models except those with the stress/satisfaction/mastery/social support covariates (**models 3c and 4c**). This finding is consistent with

an analysis of 12 years of data from the longitudinal data from the Canadian National Population Health Surveys where low income was found to be an important risk indicator for becoming psychologically distressed measured with Kessler's K6, in part owing to the higher prevalences of stressors including recent life events, chronic stressors and job strain in the lives of those with lower-income (Orpana et al. 2009).

Education attainment other than university degree was associated with MHPs only in adjusted **model 1**, but the association did not persist when rank was added to the socioeconomic covariates. So rank instead of education was used in the remaining models, as explained in more detail in the methodology section.

Military Characteristics

Rank was not significantly associated with MHPs when categorized by all six rank groups and adjusting for the socioeconomic covariates including age (**model 2a**), probably owing to the interaction between age and sex described in the methods section. Rank was significant in that model when two rank categories were used: higher odds in NCM ranks (**model 2b**). Rank (NCM) and service branch (Army) was associated with MHPs when adjusting for socioeconomic covariates (**model 3a**), but only Army remained associated when adjusting for comorbidity of physical health conditions (**model 3b**) and comorbidity plus stress/satisfaction/mastery/social support (model 3b). As explained in the Methods section, service component was not used in any of the models because there was no difference in the unadjusted odds of MHPs for RegF versus deployed ResF.

Physical Health and Chronic Pain

Both comorbidity of chronic physical health conditions and several of the individual chronic physical health conditions remained associated with MHPs in the adjusted models (3b, 3c, 4a, 4b and 4c). The odds of MHPs increased with degree of physical health multi-morbidity. The physical conditions associated with MHPs in the adjusted models included central nervous system conditions (including TBI effects), urinary incontinence, hearing problems, musculoskeletal disorders, and gastrointestinal disorders.

Chronic pain was associated with MHPs even when adjusting for socioeconomic and chronic physical conditions (**model 4b**), but the strength of association went from moderate unadjusted (UOR 3.9) to weak adjusted (AOR 1.8). This suggests that although there is usually a physical cause for chronic pain, there are factors at play other than the presence of the variables included in the models.

Surprisingly, the unadjusted odds of having a MHPs in those with one physical condition was lower than the reference category of having no physical conditions (significantly less than 1.0). At present we have no explanation for this surprising finding, which is the opposite of what we found for the increased odds (> 1.0) of having a self-reported diagnosed mental health condition in those with one physical condition. (Thompson et al. 2015). The next step in exploring this finding would be to do unadjusted regressions of comorbidity for the K10 and PC-PTSD component measures.

Stress, Satisfaction/Mastery and Social Support

High life stress, low life satisfaction, low mastery and low social support were associated with MHPs in all the multivariable models and, as described above, attenuated the relationships of most of the other covariates when they were added to them. These variables are both determinants and outcomes of mental health problems.

Summary of Risk Indicators

Table 12 summarizes in table form the risk indicators of MHPs identified in the multivariable regression models. Use this table in conjunction with **Table 10**, which gives population sizes for each of the categories of the variables used in the regression models. A given category might be strongly associated with MHPs but only affect a small number of Veterans, while another category with a weaker independent association might affect a large number. For example in **model 3c**, the AOR for low mastery was 3.5 affecting a fifth of the population overall (20.8%), or more than a third of the 22.2% of the population with mild/moderate MHPs (9.1%/22.2%) and almost two-thirds of the 15.7% of the population with severe MHPs (11.7%/16.4%). In **model 4b**, the AOR for hearing problems was 2.5, affecting 5.2% of the population overall but about a fifth of those with severe MHPs (3.1%/15.9%).

Table 12. Risk indicators for MHPs identified in the multivariate models.

Model	Adjustments*	Risk Indicators (Significant AORs)
1 - Socioeconomics		
1	Age Sex Marital status Education Income adequacy	40-49 (2.1), 50-59 (1.4) (NS) Widowed/separated/divorced (2.2), single/never married (1.6) Other than university degree (1.3-1.6 three categories) Lowest (2.3), second lowest (1.9)
2 –Rank 6 categories and 2 categories		
2a	Age Sex Marital status Education Income adequacy Rank 6 categories	40-49 (2.0) (NS) Widowed/separated/divorced (2.1), single/never married (1.7) (NS) Lowest (2.3), second lowest (1.9) (NS)
2b	Age Sex Marital status Education Income adequacy Rank 2 categories	<30 (0.6), 40-49 (2.0) (NS) Widowed/separated/divorced (2.2), single/never married (1.6) (NS) Lowest (2.3), second lowest (1.9) NCM (1.4 any MHP, 2.0 severe MHPs vs none or any)
3 –Military Characteristics, PHC comorbidity and stress/satisfaction/mastery/social support		
3a	Age Sex Marital status Income adequacy Rank 2 categories Service element	<30 (0.5), 40-49 (1.9) (NS) Widowed/separated/divorced (2.2), single/never married (1.6) Lowest (2.1), second lowest (1.8) NCM (1.6) Army (1.6)
3b	Age Sex Marital status Income adequacy Rank 2 categories Service element PHC comorbidity	30-39 (1.9), 40-49 (2.5) (NS) Widowed/separated/divorced (2.4), single/never married (1.8) Lowest (2.0), second lowest (1.8) NS Army (1.6) 1 PHC (2.3), 2 PHCs (4.2), 3+ PHCs (9.6)

Model	Adjustments*	Risk Indicators (Significant AORs)
3c	Age Sex Marital status Income adequacy Rank 2 categories Service element PHC comorbidity Life stress Life satisfaction Mastery Social support	40-49 (1.8) (NS) Widowed/separated/divorced (1.6) (NS) (NS) Army (1.6) 1 PHC (2.0), 2 PHCs (2.6), 3+ PHCs (4.9) A bit (1.6), Quite a bit/extreme (3.2) Neither (2.5), dissatisfied/very dissatisfied (5.1) Medium (NS any MHP, 1.9 severe MHPs vs none or any), Low (3.5) Low (2.3)

4 – Individual chronic physical health conditions		
4a	Age Sex Marital status Income adequacy Rank 2 categories Individual PHCs	30-39 (2.1), 40-49 (2.6) (NS) Widowed/separated/divorced (2.4), single/never married (1.8) Lowest 2 quintiles (1.8, 1.7) (NS) CNS (3.0), urinary incontinence (2.9), hearing problems (2.7), MSK (2.6), GI (1.9)
4b	Age Sex Marital status Income adequacy Rank 2 categories Individual PHCs Chronic pain	30-39 (2.1), 40-49 (2.4) NS Widowed/separated/divorced (2.3), single/never married (1.8) Lowest 2 quintiles (1.7, 1.6) NS CNS (2.8), urinary incontinence (2.8), hearing problems (2.5), MSK (2.1), GI (1.7) Yes (1.8)
4c	Age Sex Marital status Income adequacy Rank 2 categories Individual PHCs Life stress Life satisfaction Mastery Social support	30-39 (2.1), 40-49 (2.4) NS Widowed/separated/divorced (2.3), single/never married (1.8) Lowest 2 quintiles (1.7, 1.6) NS CNS (2.8), urinary incontinence (2.8), hearing problems (2.5), MSK (2.1), GI (1.7) A bit (1.5), Quite a bit/extreme (3.2) Neither (2.6), dissatisfied/very dissatisfied (4.9) Low (3.2) Low (2.4)

AOR = adjusted odds ratio, NS = Not significantly different from 1.0, NCM = non-commissioned member, PHC = self-reported diagnosed chronic physical health condition.

*Reference categories:

Age: oldest (60-69 years)

Sex: male

Marital status: Married/commonlaw

Education: University degree

Income: Highest quintile

Rank: Highest

Service element: Air Force

PHC comorbidity: None

Chronic physical conditions or chronic pain: Without the condition

Life stress: Not at all/not very
Life satisfaction: Satisfied/very satisfied
Mastery: Highest tertile
Social support: Not low

Association of Mental Health Problems with Difficult Adjustment to Civilian Life

This section summarizes findings from the difficult adjustment regressions and makes comparisons to the LASS 2010 analysis (MacLean et al. 2014). In the initial LASS 2010 analysis of factors associated with difficult adjustment to civilian life (MacLean et al. 2010), covariates associated with difficult adjustment in the final model were *length of service 2-19 years, medical or involuntary release, NCM rank and Army element*.

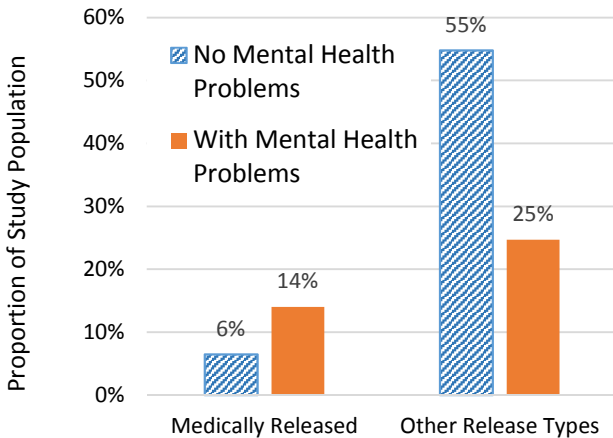
However, that initial regression modelling included only factors available at the time of release. It did not account for factors at the time of the survey, when respondents reported difficult adjustment. Subsequent analyses of the LASS 2010 and 2013 data extended that initial work on factors associated with difficult adjustment to civilian life by also including factors available at the time of the survey. The LASS 2010 analysis differed methodologically in three ways from this present analysis:

1. Used prevalence comparisons rather than regression to hypothesize about risk indicators for difficult adjustment using a variety of well-being indicators available at the time of the survey.
2. The regression modeling used only variables for which there were data at the time of release while this analysis included variables from the time of the survey.
3. Used backward stepwise regression removing one variable at a time while the modeling in this study used a forward block approach.
4. Sampled RegF Veterans while this analysis combined RegF and deployed ResF Veterans.

Descriptive Findings

The emphasis in policy discussions has been on the medically released, however, the majority (60%) of the approximately 27% of RegF Veterans who reported difficult adjustment in LASS 2013 were not medically released (40% were medically released). The survey findings indicate that health problems are prominent in those who were not medically released and reported having difficult adjustment to civilian life. As shown in **Figure 2**, MHPs were prominent in those who medically released (14% vs 7%), but more of the population who had MHPs had not been medically released (25% vs 14%). As shown in **Table 10**, nearly half (46%) of those who were released involuntarily had MHPs, higher than the 39% for the population as a whole but lower than the prevalence of MHPs in those who were voluntarily released (30%).

Figure 2. Proportion of RegF/deployed ResF Veterans with MHPs, by type of release.



Mental health problems are prominent in those who were not medically released and reported difficult adjustment to civilian life. **Table 13** shows that in the majority (79%) of RegF Veterans who were not medically released chronic physical and particularly mental health problems were considerably more prevalent among those who reported having a difficult adjustment to civilian life than in those who reported neither or easy adjustment. **Table 14** shows that in the majority (79%) of RegF Veterans who were not medically released, nearly half (45%) of those who had MHPs reported difficult adjustment, as did half (50%) of those with suicidal ideation.

Table 13. Prevalence of health and disability problems by degree of difficulty in adjustment to civilian life among the 79% of RegF Veterans who were not medically released.

Indicator	Adjustment to Civilian Life (Proportion of Subgroup who had the Indicator)		
	Moderately/Very Difficult Adjustment	Neither	Very/Moderately Easy Adjustment
Chronic physical health conditions	77%*	68%	61%
Mental health problems (composite measure)	69%	33%	19%
Diagnosed mental health conditions	45%	15%	7%
Severe psychiatric distress (K10 20-40)	16%	F	F
Chronic pain	39%	26%	19%
3 or more chronic physical health conditions	22%	15%	11%
Co-occurring mental and physical health condition	39%	15%	6%
Health-related activity limitations	65%	47%	29%
Need assistance with one or more ADLs	24%	F	6%
Past-year suicidal ideation	10%	F	F

e.g. 77% of those who reported moderately/very difficult adjustment had chronic physical health conditions.
 F = sample size less than 30, population estimate uncertain.

Table 14. Proportion reporting degrees of difficulty in adjustment to civilian life by health and disability indicators in the 79% of RegF Veterans who were not medically released.

Indicator	Adjustment to Civilian Life (Proportion with Indicator)			Total
	Moderately/ Very Difficult Adjustment	Neither	Very/ Moderately Easy Adjustment	
Chronic physical health conditions	24%*	16%	59%	100%
Mental health problems (composite measure)	45%	16%	39%	100%
Diagnosed mental health conditions	57%	14%	29%	100%
Severe psychiatric distress (K10 20-40)	71%	F	F	100%
Chronic pain	33%	17%	50%	100%
3 or more chronic physical health conditions	34%	17%	50%	100%
Co-occurring mental and physical health condition	56%	16%	28%	100%
Health-related activity limitations	34%	19%	47%	100%
Need assistance with one or more ADLs	47%	F	38%	100%
Past-year suicidal ideation	50%	F	F	100%

*e.g. 24% of those with chronic health conditions reported moderately or very difficult adjustment.

F = sample size less than 30, population estimate uncertain.

Regression Findings

In the LASS 2010 analysis (MacLean et al. 2010), covariates associated with difficult adjustment in the final model were length of service 2-19 years, medical or involuntary release, NCM rank and Army element. The other covariates had dropped out (sex, marital status and number of deployments). However, that initial regression modelling did not account for well-being measures at the time of the survey. This new analysis extended the initial work on factors associated with difficult adjustment to civilian life (MacLean et al. 2010) by:

1. Using ordinal logistic regression to calculate odds ratios to identify risk indicators for difficult adjustment. This allowed testing of the hypothesis that Veterans in the middle category (neither difficult nor easy) differed from those in the difficult/very difficult adjustment category.
2. Used multivariable ordinal logistic regression to identify factors associated with difficult adjustment to civilian life available at the time of the survey. This allowed for assessing associations of factors with difficult adjustment while adjusting for the presence of other factors.

Appendix Tables 5 and 6 show unadjusted and adjusted odds ratios (UORs and AORs) for difficult adjustment in five models:

Model 5a: socioeconomic factors.

Model 5b: socioeconomic factors, rank and service element.

Model 5c: socioeconomic factors, rank, service element, physical health comorbidity, chronic pain and MHPs.

Model 5d: socioeconomic factors, rank, service element, comorbidity of MHPs and physical health conditions.

Model 5e: socioeconomic factors, rank, service element, physical health comorbidity, chronic pain, MHPs and type of release from service.

1. Unadjusted Risk Indicators for Difficult Adjustment

In unadjusted regressions, the odds of difficult adjustment to civilian life were higher for those with the following characteristics (Thompson et al. 2016):

- Age less than 60 (versus older)
- Widowed/separated/divorced (versus married or commonlaw)
- Lower income (versus higher)
- Education other than university degree (versus university degree)
- Not employed (versus employed)
- NCM rank (versus senior officer)
- All release types except retirement age, especially medical release in unadjusted regressions before controlling for physical and mental health status (versus retirement age).
- Army (versus Air Force)
- Increasing number of chronic physical health conditions (versus none)
- Chronic pain (versus no pain)
- Especially mental health problems (odds of difficult adjustment were 14 times higher in those with severe mental health problems and 4 times higher in those with mild-moderate mental health problems than in those with no mental health problems).
- Health-related activity limitations and need for assistance with activities of daily living (versus no limitations) are also risk indicators for difficult adjustment but were not included in the mental health problem analysis because activity limitations are confounded by health conditions and because the association had already been documented in a prior paper (Thompson et al. 2014).

The variable with the strongest unadjusted association was severe MHPs (UOR 13.8), followed by mild/moderate MHPs (4.1), chronic pain (3.2) and multimorbidity of three or more chronic physical conditions (3.7). The other variables with significant associations had lower UORs.

These unadjusted regression findings are consistent with the descriptive findings using prevalences in the LASS 2010 analysis (MacLean et al. 2014).

2. Adjusted Regressions

The adjusted models (5a to 5e) are shown in **Appendix Tables 5 and 6**.

Socioeconomic and Military Characteristics

In all 6 multivariable models, sex was not associated with difficult adjustment in any model, consistent with the LASS 2010 study (MacLean et al. 2014) and with an analysis of gender (Hachey et al. 2016).

Age at survey below 60 and not being employed remained associated with difficult adjustment. These are new findings because these variables were not used in the prior multiple regression since they are not data available at the time of release (MacLean et al. 2014). The age finding implies that something about being in those age groups is important that was not included in the models. One possibility could be measures of subjective well-being related to release in mid-career, for example family stress, financial dissatisfaction, or work dissatisfaction owing to being employed with activity limitations. In the LASS 2010 analysis (MacLean et al. 2014), mid-career release at 2-19 years of service years was associated with difficult adjustment, so perhaps most who were aged 60+ at the time of the survey had long years of service and therefore might have been better prepared for release and retirement.

In the first adjusted model (**model 5a**), all socioeconomic variables except sex were associated with difficult adjustment. When military characteristics were added (**model 5b**), NCM rank and Army element were associated with difficult adjustment while, as in the MHP models, education was no longer associated with difficult adjustment, likely because rank and education are correlated. The associations for NCM rank and Army element are consistent with findings in the LASS 2010 study (MacLean et al. 2014).

Importance of Physical and Especially Mental Health

When health measures were added (**model 5c**) severe MHPs had by far the strongest association with difficult adjustment (AOR 7.7), followed by chronic pain (1.7) and multi-comorbidity of 3 or more chronic physical health conditions (1.4). Among the socioeconomic and military characteristics, only age less than 60 and not being employed were also associated with difficult adjustment.

In the adjusted model assessing comorbidity (co-occurrence) of physical and mental health conditions (**model 5d**), the ordinal AORs were not proportional and so the model produced two different AOR sets (**Table 13**). In both cases, the co-occurrence of physical and mental health conditions had the strongest association with difficult adjustment, followed by MHP only and then PHC only. The synergy index⁶ did not reach statistical significance for having any MHP compared to no/little MHP (**Table 12**). An index greater than 1 would have indicated a synergistic additive interaction of physical conditions and mental health problems. A third (33.3%) of the population had PHC+MHPs comorbidity – the great majority of those with MHPs also had chronic physical health conditions (85%). The proportion of difficult adjustment odds attributable to the interaction of PHC and MHPs was 17.2%⁷.

Disability (activity limitations) measures were previously found to be correlated with difficult adjustment to civilian life (Thompson et al. 2014d) and so were not used in the regression models because we used the more direct health measures.

Table 15. Adjusted odds of MHPs for comorbidity categories (See Model 5d in Appendix Table 6).

Comorbidity Categories	AOR (95% C.I.)	
	Mild/moderate or severe compared to no/little MHP	Severe compared to mild/moderate or no/little MHP
Comorbidity categories:		
Neither PHC nor MHP	Ref.	Ref.
PHC only	1.5* (1.1-2.0)	1.5* (1.1-2.0)
MHP only	4.1*** (2.5-6.5)	6.7*** (4.1-11.1)
Both PHC and MHP	6.5*** (4.8-8.9)	8.7*** (6.2-12.0)
Synergy Index (95% CI)	1.6 (1.0-2.5)	1.2 (0.7-2.0)

Adjusted for socioeconomics, rank, service element and comorbidity.

MHP = Mental health problem composite measure.

PHC = Chronic physical health condition.

*p<0.05, ***p<0.001

⁶ The Synergy Index = $AOR_{MHP\&PHC} - 1 / [(AOR_{MHP} - 1) + (AOR_{PHC} - 1)]$; see Andersson et al. 2005 for methodology.

⁷ $(AOR_{MHP\&PHC} - AOR_{MHPs} - AOR_{PHC} + 1) / AOR_{MHP\&PHC}$.

Type of Release from Service

The association between medical release and difficult adjustment sharply attenuated when adjusting for physical and mental health (**model 5e in Appendix 6**), which suggests that difficult adjustment could be more about health problems than type of release. Mental health problems and chronic pain were associated with difficult adjustment independently of type of release. This is important, because the majority (60%) of the approximately 27% of RegF Veterans who reported difficult adjustment in LASS 2013 were not medically released. Three MHP findings emphasize that it is not about medical release:

1. The majority with MHPs had been released for reasons other than medical release (**Table 13**), primarily voluntary release (**Table 10**).
2. In those who were not medically released, health problems and activity limitations were much more prevalent in those reported difficult adjustment than those who did not (**Table 14**).
3. In those who did not medically release, half or more of those with diagnosed mental health conditions or suicidal ideation and nearly three quarters of those with severe psychological distress reported difficult adjustment (**Table 15**). In other words, a majority of those reporting difficult adjustments were not medically released and yet had significant health and disability problems.

Medical release still had a weak independent association with difficult adjustment (AOR 1.8) after adjusting for physical and mental health. In that model, MHPs had the strongest adjusted associations with difficult adjustment (mild/moderate 3.1 and severe 7.2), and chronic pain was also independently associated with difficult adjustment (1.6). This finding suggests that there was something about medical release or about those who were medically released other than the covariates used in the models which explains the association between medical release and difficult adjustment.

In the first analysis, involuntary release was independently associated with difficult adjustment (MacLean et al. 2014). However in this analysis, involuntary release was not independently associated with difficult adjustment when adjusting for health measures available at the time of the survey (**model 5e in Appendix 6**). This suggests that mental health problems could be a significant explanatory factor in difficult adjustment for those who were involuntarily released.

Summary

This new analysis extended the earlier work on understanding of factors associated with difficult adjustment to civilian life which found that length of service 2-19 years, medical or involuntary release, NCM rank and Army element were associated with difficult adjustment (MacLean et al. 2010) by identifying risk indicators using logistic regression and using well-being indicators for the time of the survey. The analysis confirmed a variety of risk indicators for difficult adjustment using unadjusted ordinal logistic regression that had been hypothesized using prevalence comparisons in the LASS 2010 paper (MacLean et al. 2014). The analysis found that mental health problems were associated moderately to strongly with reporting difficult adjustment to civilian life. Chronic physical health conditions, chronic pain, age below 60 years, not being employed, NCM rank and Army service also had adjusted associations with difficult adjustment. Focus only on the medically released would miss many who were not medically released but report difficult adjustment to civilian life and had health and activity limitations problems within 15 years of release from service.

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Appendices

Appendix Table 1. Results of regression models for mental health problems: 1 (socioeconomics), 2a and 2b (added ranks using two different ways of categorizing rank).

Characteristic	Mental Health Problems (Sample Size, Weighted%)				Unadjusted UOR ¹ (95% C.I.)	Adjusted 1: Socioeconomics	Adjusted 2a: Socioeconomics & Rank 6 categories	Adjusted 2b: Socioeconomics & Rank 2 categories
	No/Little	Mild/ Moderate	Severe	Total				
Total	2020, 61.3	721, 22.3	473, 16.4	3214, 100.0	--	--	--	--
Age	<30	251, 19.0	69, 14.5	37, 10.1	357, 16.6	1.0 (0.7-1.4)	0.7 (0.4-1.0)	0.6* (0.4-0.9)
	30-39	446, 21.0	174, 24.9	88, 20.1	708, 21.7	1.6*** (1.2-2.2)	1.3 (1.0-1.8)	1.3 (0.9-1.9)
	40-49	421, 21.6	171, 24.4	167, 37.7	759, 24.9	2.1*** (1.6-2.5)	2.1*** (1.6-2.9)	2.0*** (1.5-2.7)
	50-59	580, 27.6	214, 26.9	148, 26.8	942, 27.3	1.5** (1.1-2.0)	1.4* (1.0-1.8)	1.3 (1.0-1.7)
	60+	322, 10.8	93, 9.2	33, 5.2	448, 9.5	Ref.	Ref.	Ref.
Sex	Male	1722, 86.6	588, 84.3	397, 85.5	2707, 85.9	Ref.	Ref.	Ref.
	Female	298, 13.4	133, 15.7	76, 14.5	507, 14.1	1.1 (0.9-1.5)	1.1 (0.9-1.4)	1.1 (0.8-1.4)
Marital status	Married, common-law	1634, 77.7	538, 69.9	310, 63.9	2482, 73.7	Ref.	Ref.	Ref.
	Widowed, separated, divorced	133, 7.1	73, 10.4	78, 19.2	284, 9.8	2.5*** (1.9-3.4)	2.2*** (1.6-3.0)	2.1*** (1.6-3.0)
	Single, never married	253, 15.2	110, 19.7	85, 16.9	448, 16.5	1.4* (1.0-1.7)	1.6** (1.2-2.1)	1.6** (1.2-2.1)
Education level attained	Less than high school	68, 4.3	36, 6.3	33, 5.9	137, 5.0	2.2*** (1.5-3.3)	1.5* (1.0-2.4)	1.2 (0.8-2.0)
	High school	711, 41.5	246, 39.4	181, 45.2	1138, 41.6	1.6*** (1.3-2.1)	1.3* (1.0-1.7)	1.0 (0.8-1.4)
	Post-secondary not degree	627, 34.1	255, 39.4	186, 39.0	1068, 36.1	1.8*** (1.5-2.3)	1.6** (1.2-2.0)	1.2 (0.9-1.7)
	University degree	613, 20.1	180, 14.9	72, 10.0	865, 17.3	Ref.	Ref.	Ref.
Income adequacy (quintile)	Lowest 1	302, 20.0	149, 27.2	133, 35.2	584, 24.1	2.3*** (1.8-3.1)	2.3*** (1.6-3.2)	2.2*** (1.5-3.0)
	2	360, 19.5	140, 21.3	114, 25.5	614, 20.9	2.0*** (1.5-2.6)	1.9*** (1.4-2.7)	1.9*** (1.4-2.6)
	3	391, 20.0	132, 18.2	74, 16.5	597, 19.0	1.3 (1.0-1.8)	1.3 (0.9-1.8)	1.2 (0.9-1.7)
	4	435, 22.0	143, 18.7	60, 12.4	638, 19.7	1.1 (0.8-1.5)	1.0 (0.8-1.4)	1.0 (0.7-1.4)
	Highest 5	422, 18.5	115, 14.6	55, 10.4	592, 16.3	Ref.	Ref.	Ref.
Last military rank	Senior officer	305, 9.4	71, 6.0	27, 3.2	403, 7.6	Ref.	Not in Model	Officers:
	Junior officer	268, 8.7	88, 7.6	37, 4.8	393, 7.8	1.4* (1.0, 2.0)	Not in Model	Ref.
	Cadet	107, 5.0	25, 3.1	7, 1.1	139, 3.9	0.9 (0.6, 1.4)	Not in Model	
	Senior NCM	616, 24.0	242, 25.8	176, 26.4	1034, 24.8	2.2*** (1.7, 2.9)	Not in Model	NCMs:
	Junior NCM	621, 39.7	262, 46.1	208, 56.3	1091, 43.9	2.6*** (2.0, 3.5)	Not in Model	1.4* (1.1-1.9)
	Recruit	103, 13.2	33, 11.4	18, 8.3	154, 12.0	1.5* (1.0, 2.3)	Not in Model	2.0*** (1.4-2.9)

Characteristic	Mental Health Problems (Sample Size, Weighted%)				Unadjusted UOR ¹ (95% C.I.)	Adjusted 1: Socioeconomics	Adjusted 2a: Socioeconomics & Rank 6 categories	Adjusted 2b: Socioeconomics & Rank 2 categories	
	No/Little	Mild/ Moderate	Severe	Total					
Service element									
	Air Force	588, 30.5	197, 29.4	92, 20.0	877, 28.5	Ref.	Not in Model	Not in Model	Not in Model
	Navy	351, 17.0	105, 14.5	66, 15.2	522, 16.2	1.1 (0.8-1.4)	Not in Model	Not in Model	Not in Model
	Army	1081, 52.5	419, 56.1	315, 64.8	1815, 55.3	1.4*** (1.2-1.8)	Not in Model	Not in Model	Not in Model
Service Component									
	RegF	1451, 94.1	500, 93.6	353, 95.4	2304, 94.2	Ref.	Not in Model	Not in Model	Not in Model
	Reserve Class C	569, 5.9	221, 6.4	120, 4.6	910, 5.8	0.9 (0.8-1.1)	Not in Model	Not in Model	Not in Model
Comorbidity of chronic physical health conditions									
	0	726, 38.4	135, 20.5	37, 9.1	898, 29.4	Ref.	Not in Model	Not in Model	Not in Model
	1	648, 32.3	200, 29.1	111, 22.3	959, 29.9	0.5*** (0.4-0.6)	Not in Model	Not in Model	Not in Model
	2	342, 17.4	201, 27.6	117, 25.1	660, 21.0	1.9*** (1.4-2.4)	Not in Model	Not in Model	Not in Model
	3 or more	240, 11.9	168, 22.8	204, 43.5	612, 19.7	3.2*** (2.5-4.2) 4.4*** (3.3-6.0)	Not in Model	Not in Model	Not in Model
Life stress most days									
	Not at all or not very	899, 46.0	176, 27.0	57, 11.5	1132, 36.1	Ref.	Not in Model	Not in Model	Not in Model
	A bit	823, 39.9	350, 49.1	167, 35.9	1340, 41.3	2.5*** (2.0- 3.1)	Not in Model	Not in Model	Not in Model
	Quite a bit or extremely	295, 14.1	194, 23.9	249, 52.6	738, 22.6	5.8*** (4.5-7.6)	Not in Model	Not in Model	Not in Model
Satisfaction with life									
	Satisfied or very satisfied	1968, 97.0	603, 82.7	243, 50.3	2814, 86.2	Ref.	Not in Model	Not in Model	Not in Model
	Neither	40, 2.2	77, 10.6	78, 19.1	195, 6.8	8.4*** (5.9- 12.0)	Not in Model	Not in Model	Not in Model
	Dissatisfied/very dissatisfied	11, 0.8	39, 6.7	150, 30.6	200, 7.0	24.9*** (16.5, 37.7)	Not in Model	Not in Model	Not in Model
Mastery (Cutoffs based on tertiles)									
	High	102, 48.6	215, 30.3	47, 7.4	1283, 37.8	Ref.	Not in Model	Not in Model	Not in Model
	Medium	724, 37.2	211, 28.8	88, 20.3	1023, 32.3	1.6*** (1.3-2.1) 3.5*** (2.2-5.6)	Not in Model	Not in Model	Not in Model
	Low	261, 14.1	288, 40.9	328, 71.9	877, 29.5	9.0*** (7.0-11.6) 19.9*** (13.1-30.2)	Not in Model	Not in Model	Not in Model
Social Provisions Scale									
	Not low	1899*, 94.4	568, 78.3	251, 56.0	2718, 84.8	Ref.	Not in Model	Not in Model	Not in Model
	Low (score ≤ 29)	94, 5.6	133, 20.9	186, 44.0	413, 15.2	7.4*** (5.7-9.5)	Not in Model	Not in Model	Not in Model

¹UOR (unadjusted odds ratio) same for moderate and high versus no/little and for high versus no/little and moderate except where shown.

***p<0.001

Appendix Table 2. Results of regression models for mental health problems: 3a (added service element), 3b (added physical health comorbidity) and 3c (added life stress, life satisfaction, social support and mastery).

Characteristic	Mental Health Problems (Sample Size, Weighted%)				Total	Unadjusted UOR ¹ (95% C.I.)	Adjusted 3a: Socioeconomic, Rank, Element	Adjusted 3b: Socioeconomic, Rank, Element, PHC's	Adjusted 3c: Socioeconomic, Rank, Element, PHCs, Stress/Coping
	No/Little	Mild/ Moderate	Severe						
Total	2020, 61.3	721, 22.3	473, 16.4	3214, 100.0	--	--	--	--	
Age	<30	251, 19.0	69, 14.5	37, 10.1	357, 16.6	1.0 (0.7-1.4)	0.5** (0.4-0.8)	1.4 (0.9-2.2)	1.5 (0.9-2.5)
	30-39	446, 21.0	174, 24.9	88, 20.1	708, 21.7	1.6** (1.2-2.2)	1.0 (0.7-1.4)	1.9** (1.3-2.7)	1.5 (1.0-2.2)
	40-49	421, 21.6	171, 24.4	167, 37.7	759, 24.9	2.1*** (1.6-2.5)	1.9*** (1.4-2.5)	2.5*** (1.8-3.4)	1.8** (1.2-2.5)
	50-59	580, 27.6	214, 26.9	148, 26.8	942, 27.3	1.5** (1.1-1.9)	1.3 (0.9-1.7)	1.3 (0.9-1.8)	1.1 (0.8-1.5)
	60+	322, 10.8	93, 9.2	33, 5.2	448, 9.5	Ref.	Ref.	Ref.	Ref.
Sex	Male	1722, 86.6	588, 84.3	397, 85.5	2707, 85.9	Ref.	Ref.	Ref.	Ref.
	Female	298, 13.4	133, 15.7	76, 14.5	507, 14.1	1.1 (0.9-1.5)	1.2 (0.9-1.6)	1.2 (0.9-1.6)	1.1 (0.8-1.5)
Marital status	Married, common-law	1634, 77.7	538, 69.9	310, 63.9	2482, 73.7	Ref.	Ref.	Ref.	Ref.
	Widowed/separated/divorced	133, 7.1	73, 10.4	78, 19.2	284, 9.8	2.5*** (1.9-3.4)	2.2*** (1.6-3.1)	2.4*** (1.8-3.4)	1.6* (1.1-2.3)
	Single, never married	253, 15.2	110, 19.7	85, 16.9	448, 16.5	1.4* (1.1-1.8)	1.6** (1.2-2.2)	1.8*** (1.3-2.4)	1.2 (0.8-1.7)
Education level attained	Less than high school	68, 4.3	36, 6.3	33, 5.9	137, 5.0	2.2*** (1.5-3.3)	Not in Model	Not in Model	Not in Model
	High school	711, 41.5	246, 39.4	181, 45.2	1138, 41.6	1.6*** (1.3-2.1)	Not in Model	Not in Model	Not in Model
	Post-secondary not degree	627, 34.1	255, 39.4	186, 39.0	1068, 36.1	1.8*** (1.5-2.3)	Not in Model	Not in Model	Not in Model
	University degree	613, 20.1	180, 14.9	72, 10.0	865, 17.3	Ref.	Not in Model	Not in Model	Not in Model
Income adequacy (quintile)	Lowest 1	302, 20.0	149, 27.2	133, 35.2	584, 24.1	2.3*** (1.8-3.1)	2.1*** (1.5-2.9)	2.0*** (1.4-2.8)	1.2 (0.8-1.8)
	2	360, 19.5	140, 21.3	114, 25.5	614, 20.9	2.0*** (1.5-2.6)	1.8*** (1.3-2.5)	1.8** (1.3-2.5)	1.4 (1.0-2.1)
	3	391, 20.0	132, 18.2	74, 16.5	597, 19.0	1.3 (1.0-1.8)	1.2 (0.9-1.7)	1.2 (0.9-1.8)	1.2 (0.8-1.7)
	4	435, 22.0	143, 18.7	60, 12.4	638, 19.7	1.1 (0.8-1.5)	1.0 (0.7-1.4)	1.2 (0.9-1.6)	1.2 (0.8-1.7)
	Highest 5	422, 18.5	115, 14.6	55, 10.4	592, 16.3	Ref.	Ref.	Ref.	Ref.
Last military rank	Officer	680, 23.1	184, 16.7	71, 9.0	935, 19.3	Ref.	Ref.	Ref.	Ref.
	Non-Commissioned Member	1340, 76.9	537, 83.3	402, 91.0	2279, 80.7	1.9*** (1.6-2.3) 2.7*** (2.1-3.7)	1.6*** (1.3-1.9)	1.2 (0.9-1.4)	1.1 (0.8-1.4)
Service element	Air Force	588, 30.5	197, 29.4	92, 20.0	877, 28.5	Ref.	Ref.	Ref.	Ref.
	Navy	351, 17.0	105, 14.5	66, 15.2	522, 16.2	1.1 (0.8-1.4)	1.1 (0.9-1.5)	1.1 (0.8-1.5)	1.1 (0.8-1.5)
	Army	1081, 52.5	419, 56.1	315, 64.8	1815, 55.3	1.4*** (1.2-1.8)	1.6*** (1.2-2.0)	1.6*** (1.3-2.1)	1.6*** (1.2-2.0)
Service Component	RegF	1451, 94.1	500, 93.6	353, 95.4	2304, 94.2	Ref.	Not in Model	Not in Model	Not in Model
	Reserve Class C	569, 5.9	221, 6.4	120, 4.6	910, 5.8	0.9 (0.8-1.1)	Not in Model	Not in Model	Not in Model

Characteristic	Mental Health Problems (Sample Size, Weighted%)			Total	Unadjusted UOR ¹ (95% C.I.)	Adjusted 3a: Socioeconomic, Rank, Element	Adjusted 3b: Socioeconomic, Rank, Element, PHC's	Adjusted 3c: Socioeconomic, Rank, Element, PHCs, Stress/Coping
	No/Little	Mild/ Moderate	Severe					
Comorbidity of chronic physical health conditions								
0	726, 38.4	135, 20.5	37, 9.1	898, 29.4	Ref.	Not in Model	Ref.	Ref.
1	648, 32.3	200, 29.1	111, 22.3	959, 29.9	0.5*** (0.4-0.6)	Not in Model	2.3*** (1.7-3.1)	2.0*** (1.5-2.8)
2	342, 17.4	201, 27.6	117, 25.1	660, 21.0	1.9*** (1.4-2.4)	Not in Model	4.2*** (3.1-5.6)	2.6*** (1.9-3.7)
3 or more	240, 11.9	168, 22.8	204, 43.5	612, 19.7	3.2*** (2.5-4.2) 4.4*** (3.3-6.0)	Not in Model	9.6*** (6.9-13.1)	4.9*** (3.5-7.0)
Life stress most days								
Not at all or not very	899, 46.0	176, 27.0	57, 11.5	1132, 36.1	Ref.	Not in Model	Not in Model	Ref.
A bit	823, 39.9	350, 49.1	167, 35.9	1340, 41.3	2.5*** (2.0, 3.1)	Not in Model	Not in Model	1.6*** (1.2-2.1)
Quite a bit or extremely	295, 14.1	194, 23.9	249, 52.6	738, 22.6	5.8*** (4.5, 7.6) 9.8*** (7.3-13.2)	Not in Model	Not in Model	3.2*** (2.3-4.4)
Satisfaction with life								
Satisfied or very satisfied	1968, 97.0	603, 82.7	243, 50.3	2814, 86.2	Ref.	Not in Model	Not in Model	Ref.
Neither	40, 2.2	77, 10.6	78, 19.1	195, 6.8	9.8*** (7.3, 13.2)	Not in Model	Not in Model	2.5*** (1.7-3.7)
Dissatisfied/very dissatisfied	11, 0.8	39, 6.7	150, 30.6	200, 7.0	24.9*** (16.5, 37.7)	Not in Model	Not in Model	5.1*** (3.1-8.3)
Mastery (cutoffs based on tertiles)								
High	1021, 48.6	215, 30.3	47, 7.4	1283, 37.8	Ref.	Not in Model	Not in Model	Ref.
Medium	724, 37.2	211, 28.8	88, 20.7	1023, 32.7	1.6*** (1.3-2.1)	Not in Model	Not in Model	1.2 (0.9-1.6)
Low	261, 14.0	288, 40.9	328, 71.9	877, 29.5	3.5*** (2.2-5.6) 9.0*** (7.0-11.6) 19.9*** (13.1-30.2)	Not in Model	Not in Model	1.9** (1.3-2.9) 3.5*** (2.6-4.7)
Social Provisions Scale								
Not low	1899, 94.4	568, 78.3	251, 56.0	2718, 84.8	Ref.	Not in Model	Not in Model	Ref.
Low (score ≤ 29)	94, 5.6	133, 21.7	186, 44.0	413, 15.2	7.4*** (5.7-9.5)	Not in Model	Not in Model	2.3*** (1.7-3.1)

¹UOR (unadjusted odds ratio) same for moderate and high versus no/little and for high versus no/little and moderate except where shown.

***p<0.001

PHC = Physical health conditions.

Appendix Table 3. Results of regression models 4a, 4b and 4c for mental health problems (socioeconomics + individual chronic physical conditions, chronic pain, stress/satisfaction/social support/mastery).

Characteristic	Mental Health Problems (Sample Size, Weighted %)				Unadjusted UOR ¹ (95% C.I.)	Adjusted 4a: Socioeconomics PHCs	Adjusted 4b: Socioeconomics PHCs, Pain	Adjusted 4c: Socioeconomics PHCs, Stress (not pain)
	No/Little	Mild/ Moderate	Severe	Total				
Total	2020, 61.3	721, 22.3	473, 16.4	3214, 100.0	--	--	--	--
Age	<30	251, 19.0	69, 14.5	37, 10.1	357, 16.6	1.0 (0.7-1.4)	1.6 (1.0-2.7)	1.7 (1.0-2.9)
	30-39	446, 21.0	174, 24.9	88, 20.1	708, 21.7	1.6** (1.2-2.2)	2.1*** (1.4-3.0)	2.1*** (1.4-3.0)
	40-49	421, 21.6	171, 24.4	167, 37.7	759, 24.9	2.1*** (1.6-2.5)	2.6*** (1.8-3.6)	2.4*** (1.7-3.4)
	50-59	580, 27.6	214, 26.9	148, 26.8	942, 27.3	1.5** (1.1-1.9)	1.3 (1.0-1.8)	1.3 (0.9-1.8)
	60+	322, 10.8	93, 9.2	33, 5.2	448, 9.5	Ref.	Ref.	Ref.
Sex	Male	1722, 86.6	588, 84.3	397, 85.5	2707, 85.9	Ref.	Ref.	Ref.
	Female	298, 13.4	133, 15.7	76, 14.5	507, 14.1	1.1 (0.9-1.5)	0.9 (0.7-1.2)	0.9 (0.6-1.2)
Marital status	Married, common-law	1634, 77.7	538, 69.9	310, 63.9	2482, 73.7	Ref.	Ref.	Ref.
	Widowed/separated/divorced	133, 7.1	73, 10.4	78, 19.2	284, 9.8	2.5*** (1.9-3.4)	2.4*** (1.7-3.4)	2.3*** (1.6-3.3)
	Single, never married	253, 15.2	110, 19.7	85, 16.9	448, 16.5	1.4* (1.1-1.8)	1.8*** (1.3-2.5)	1.8*** (1.3-2.5)
Income adequacy (quintile)	Lowest 1	302, 20.0	149, 27.2	133, 35.2	584, 24.1	2.3*** (1.8-3.1)	1.8** (1.3-2.7)	1.7** (1.2-2.5)
	2	360, 19.5	140, 21.3	114, 25.5	614, 20.9	2.0*** (1.5-2.6)	1.7** (1.2-2.5)	1.6* (1.1-2.3)
	3	391, 20.0	132, 18.2	74, 16.5	597, 19.0	1.3 (1.0-1.8)	1.2 (0.8-1.7)	1.1 (0.8-1.6)
	4	435, 22.0	143, 18.7	60, 12.4	638, 19.7	1.1 (0.8-1.5)	1.1 (0.8-1.6)	1.1 (0.8-1.5)
	Highest 5	422, 18.5	115, 14.6	55, 10.4	592, 16.3	Ref.	Ref.	Ref.
Last military rank	Officer	680, 23.1	184, 16.7	71, 9.0	935, 19.3	Ref.	Ref.	Ref.
	Non-Commissioned Member	1340, 76.9	537, 83.3	402, 91.0	2279, 80.7	1.9*** (1.6-2.3) 2.7*** (2.1-3.7)	1.2 (0.9-1.4)	1.1 (0.9-1.4)
Chronic physical health conditions (excludes chronic pain) ²	Central nervous system	155, 8.2	144, 23.4	168, 39.5	467, 16.7	4.8*** (3.8-6.1)	3.0*** (2.3-3.9)	2.8*** (2.1-3.6)
	Urinary incontinence	27, 1.4	27, 3.4	35, 7.2	89, 2.8	3.9*** (2.4-6.4)	2.9** (1.4-5.7)	2.8** (1.4-5.7)
	Hearing problems	118, 5.0	75, 9.7	87, 19.7	280, 8.4	3.4*** (2.5-4.5)	2.7*** (1.9-3.6)	2.5*** (1.9-3.5)
	Musculoskeletal	683, 31.8	406, 54.4	336, 68.4	1425, 42.8	3.3*** (2.7-4.0)	2.6*** (2.1-3.2)	2.1*** (1.6-2.6)
	Gastrointestinal	106, 5.2	87, 11.2	83, 17.7	276, 8.6	2.9*** (2.2-3.9)	1.9*** (1.3-2.6)	1.7** (1.2-2.4)
	Respiratory	122, 5.7	60, 6.6	56, 13.0	238, 7.1	1.9*** (1.4-2.7)	1.4 (0.9-2.1)	1.3 (0.9-2.0)
	Obesity	437, 23.1	188, 25.1	175, 37.1	800, 25.8	1.6*** (1.3-1.9)	1.3 (1.0-1.7)	1.2 (1.0-1.6) 1.9*** (1.4-2.5)
	Cardiovascular	382, 16.6	159, 20.2	129, 25.8	670, 18.9	1.5*** (1.2-1.9)	1.1 (0.8-1.4)	1.1 (0.8-1.4)
	Diabetes	106, 4.9	53, 6.4	38, 6.7	197, 5.5	1.3 (1.0-1.9)	0.8 (0.5-1.2)	0.8 (0.5-1.2)
	Cancer	34, 1.4	17, 2.3	8, 1.5	59, 1.6	1.3 (0.8-2.2)	1.0 (0.6-1.7)	0.9 (0.5-1.7)
Chronic pain (Ref. = no)		440, 22.1	298, 42.3	317, 63.0	1055, 33.3	3.9*** (3.2-4.7)	Not in model	1.8*** (1.4-2.3)

Characteristic	Mental Health Problems (Sample Size, Weighted %)				Unadjusted UOR ¹ (95% C.I.)	Adjusted 4a: Socioeconomics PHCs	Adjusted 4b: Socioeconomics PHCs, Pain	Adjusted 4c: Socioeconomics PHCs, Stress (not pain)
	No/Little	Mild/ Moderate	Severe	Total				
Life stress most days								
Not at all or not very	899, 46.0	176, 27.0	57, 11.5	1132, 36.1	Ref.	Not in model	Not in model	Ref.
A bit	823, 39.9	350, 49.1	167, 35.9	1340, 41.3	2.5*** (2.0, 3.1)	Not in model	Not in model	1.5** (1.2-2.0)
Quite a bit or extremely	295, 14.1	194, 23.9	249, 52.6	738, 22.6	5.8*** (4.5, 7.6)	Not in model	Not in model	3.2*** (2.3-4.4)
Satisfaction with life								
Satisfied or very satisfied	1968, 97.0	603, 82.7	243, 50.3	2814, 86.2	Ref.	Not in model	Not in model	Ref.
Neither	40, 2.2	77, 10.6	78, 19.1	195, 6.8	8.4*** (5.9, 12.0)	Not in model	Not in model	2.6*** (1.6-4.1)
Dissatisfied/very dissatisfied	11, 0.8	39, 6.7	150, 30.6	200, 7.0	24.9*** (16.5, 37.7)	Not in model	Not in model	4.9*** (2.9-8.2)
Mastery (cutoffs based on tertiles)								
High	1021, 48.6	215, 30.3	47, 7.4	1283, 37.8	Ref.	Not in model	Not in model	Ref.
Medium	724, 37.2	211, 28.8	88, 20.7	1023, 32.7	1.6*** (1.3-2.1)	Not in model	Not in model	1.3 (0.9-1.7)
					3.5*** (2.2-5.6)			2.2*** (1.5-3.3)
Low	261, 14.0	288, 40.9	328, 71.9	877, 29.5	9.0*** (7.0-11.6)	Not in model	Not in model	3.2*** (2.4-4.4)
					19.9*** (13.1-30.2)			
Social Provisions Scale								
Not low	1899, 94.4	568, 78.3	251, 56.0	2718, 84.8	Ref.	Not in model	Not in model	Ref.
Low (score ≤ 29)	94, 5.6	133, 21.7	186, 44.0	413, 15.2	7.4*** (5.7-9.5)	Not in model	Not in model	2.4*** (1.7-3.2)

¹UOR (unadjusted odds ratio) same for moderate and high versus no/little and for high versus no/little and moderate except where shown.

²Reference = without the condition.

***p<0.001

Appendix Table 4. Unadjusted odds ratios using reverse reference categories.

Characteristic	Mental Health Symptoms (Sample Size, Weighted%)				UOR ¹
	No/Little	Moderate	Severe	Total	
Total	2020, 61.3	721, 22.3	473, 16.4	3214, 100.0	--
Age					
60+	322, 10.8	93, 9.2	33, 5.2	448, 9.5	1.0
50-59	580, 27.6	214, 26.9	148, 26.8	942, 27.3	1.5*
40-49	421, 21.6	171, 24.4	167, 37.7	759, 24.9	2.1***
30-39	446, 21.0	174, 24.9	88, 20.1	708, 21.7	1.6**
<30	251, 19.0	69, 14.5	37, 10.1	357, 16.6	Ref.
Sex					
Male	1722, 86.6	588, 84.3	397, 85.5	2707, 85.9	0.9
Female	298, 13.4	133, 15.7	76, 14.5	507, 14.1	Ref.
Marital status					
Married, common law	1634, 77.7	538, 69.9	310, 63.9	2482, 73.7	0.7*
Widowed, separated, divorced	133, 7.1	73, 10.4	78, 19.2	284, 9.8	1.86**
Single, never married	253, 15.2	110, 19.7	85, 16.9	448, 16.5	Ref.
Education level attained					
University degree	613, 20.1	180, 14.9	72, 10.0	865, 17.3	0.5***
Post-secondary not degree	627, 34.1	255, 39.4	186, 39.0	1068, 36.1	0.8
High school	711, 41.5	246, 39.4	181, 45.2	1138, 41.6	0.8
Less than high school	68, 4.3	36, 6.3	33, 5.9	137, 5.0	Ref.
Income adequacy (quintile)					
Highest 5	422, 18.5	115, 14.6	55, 10.4	592, 16.3	0.4***
4	435, 22.0	143, 18.7	60, 12.4	638, 19.7	0.5***
3	391, 20.0	132, 18.2	74, 16.5	597, 19.0	0.6***
2	360, 19.5	140, 21.3	114, 25.5	614, 20.9	0.8
Lowest 1	302, 20.0	149, 27.2	133, 35.2	584, 24.1	Ref.
Last military rank					
Senior officer	305, 9.4	71, 6.0	27, 3.2	403, 7.6	0.7*
Junior officer	268, 8.7	88, 7.6	37, 4.8	393, 7.8	1.0
Cadet	107, 5.0	25, 3.1	7, 1.1	139, 3.9	0.6*
Senior NCM	616, 24.0	242, 25.8	176, 26.4	1034, 24.8	1.5*
Junior NCM	621, 39.7	262, 46.1	208, 56.3	1091, 43.9	1.7**
Private/Recruit	103, 13.2	33, 11.4	18, 8.3	154, 12.0	Ref.
Service branch (element)					
Air Force	588, 30.5	197, 29.4	92, 20.0	877, 28.5	0.9
Navy	351, 17.0	105, 14.5	66, 15.2	522, 16.2	Ref.
Army	1081, 52.5	419, 56.1	315, 64.8	1815, 55.3	1.3*

Characteristic	Mental Health Symptoms (Sample Size, Weighted%)				UOR ¹
	No/Little	Moderate	Severe	Total	
Life stress most days					
Not at all or not very	899, 46.0	176, 27.0	57, 11.5	1132, 36.1	0.2***
A bit	823, 39.9	350, 49.1	167, 35.9	1340, 41.3	0.4***
Quite a bit or extremely	295, 14.1	194, 23.9	249, 52.6	738, 22.6	Ref.
Satisfaction with life					
Satisfied or very satisfied	1968, 97.0	603, 82.7	243, 50.3	2814, 86.2	0.04***
Neither	40, 2.2	77, 10.6	78, 19.1	195, 6.8	0.3***
Dissatisfied or very dissatisfied	11, 0.8	39, 6.7	150, 30.6	200, 7.0	Ref.

*p<0.05, **p<0.01, ***p<0.001 (Absence of asterisk indicates not significantly different from 1).

Appendix Table 5. Adjustment to civilian life, three models: (5a) socioeconomics only, (5b) added military and (5c) added physical conditions, pain and MHPs.

Covariate	Ease of Adjustment to Civilian Life (Sample Size, Population Percent)				UOR	AOR Model 5a Socioeconomics	AOR Model 5b Socioeconomics Rank, Element	AOR Model 5c Socioeconomics Rank, Element Comorbidity, MHPs Chronic Pain	
	Easy	Neither	Difficult	Total					
Age	<30	226, 17.7	61, 18.3	70, 12.5	357, 16.4	1.6** (1.1-2.3)	2.1** (1.4-3.3)	1.7* (1.1-2.6)	2.1** (1.3-3.5)
	30-39	438, 20.5	106, 22.5	173, 24.4	717, 21.9	2.3*** (1.7-3.2)	3.7*** (2.5-5.4)	2.8*** (1.9-4.2)	2.8*** (1.8-4.2)
	40-49	424, 22.8	107, 22.1	236, 30.5	767, 24.8	2.6*** (1.9-3.4)	4.2*** (3.0-5.9)	3.6*** (2.5-5.1)	2.4*** (1.7-3.5)
	50-59	546, 26.8	165, 30.5	246, 27.1	957, 27.5	2.1*** (1.6-2.7)	2.9*** (2.1-4.0)	2.7*** (1.9-3.8)	2.0*** (1.4-2.9)
	60+	322, 12.1	54, 6.7	74, 5.5	450, 9.4	Ref.	Ref.	Ref.	Ref.
Sex	Female	283, 13.0	83, 15.0	143, 15.4	509, 14.0	1.2 (0.9-1.5)	1.1 (0.8-1.4)	1.1 (0.9-1.5)	1.1 (0.8-1.5)
	Male	1673, 87.0	410, 85.0	656, 84.6	2739, 86.0	Ref.	Ref.	Ref.	Ref.
Marital status									
	Married/common law	1570, 76.7	381, 74.5	559, 67.1	2510, 73.7	Ref.	Ref.	Ref.	Ref.
	Widowed/Sep./Div.	142, 7.7	46, 10.8	98, 13.7	286, 9.8	1.80*** (1.4-2.4)	1.6** (1.2-2.1)	1.6** (1.2-2.1)	1.1 (0.8-1.6)
	Single, never married	244, 15.5	66, 14.7	142, 19.3	452, 16.4	1.3 (1.0-1.7)	1.2 (0.9-1.6)	1.2 (0.9-1.7)	1.2 (0.8-1.6)
Household Income Adequacy (quintiles)									
	Lowest 1	288, 20.0	97, 26.0	206, 31.6	591, 24.1	2.4*** (1.8-3.1)	1.6** (1.1-2.2)	1.4* (1.0-2.0)	1.2 (0.8-1.8)
	2	333, 18.9	100, 21.6	190, 25.4	623, 21.1	2.2*** (1.7-3.0)	1.7** (1.3-2.4)	1.6* (1.2-2.2)	1.3 (0.9-1.9)
	3	369, 18.8	93, 19.3	144, 19.4	606, 19.1	1.8*** (1.3-2.3)	1.4* (1.1-2.0)	1.4 (1.0-1.9)	1.3 (0.9-1.9)
	4	435, 22.9	90, 16.9	114, 14.0	639, 19.5	1.1 (0.8-1.4)	0.9 (0.7-1.3)	0.9 (0.7-1.2)	0.9 (0.7-1.3)
	Highest 5	424, 19.4	88, 16.2	85, 9.5	597, 16.2	Ref.	Ref.	Ref.	Ref.
Education									
	Less than high school	72, 4.2	15, 4.7	51, 6.7	138, 4.9	2.7*** (1.7-4.1)	1.7* (1.1-2.7)	1.2 (0.8-2.1)	1.2 (0.7-2.1)
	High school	670, 39.8	174, 44.3	305, 43.6	1149, 41.6	2.0*** (1.6-2.5)	1.5** (1.2-2.0)	1.2 (0.9-1.6)	1.2 (0.9-1.7)
	Post second. non degree	594, 34.6	187, 36.9	301, 39.2	1082, 36.2	2.0*** (1.6-2.6)	1.6*** (1.3-2.0)	1.2 (0.9-1.7)	1.3 (0.9-1.7)
	Post-secondary degree	618, 21.5	117, 14.1	138, 10.5	873, 17.3	Ref.	Ref.	Ref.	Ref.
Labour Force Participation									
	Not Employed	462, 21.5	128, 24.2	324, 42.9	914, 27.7	2.0*** (1.7-2.5) 2.6*** (2.1-3.3)	2.4*** (1.9-3.0)	2.4*** (2.0-3.1)	1.7*** (1.3-2.2)
	Employed	1493, 78.5	365, 75.8	474, 57.1	2332, 72.3	Ref.	Ref.	Ref.	Ref.
Rank	NCM	1290, 24.4	370, 15.5	645, 11.2	2305, 19.4	2.2*** (1.8-2.6)	Not in model	1.5** (1.1-1.9)	1.2 (0.9-1.6)
	Officer	666, 75.6	123, 84.5	154, 88.8	943, 80.6	Ref.	Ref.	Ref.	Ref.
Element	Army	1056, 51.4	257, 50.1	523, 66.7	1836, 55.3	1.5*** (1.2-1.8) 2.0*** (1.6-2.5)	Not in model	1.4** (1.1-1.5) 2.0*** (1.5-2.5)	1.2 (0.9-1.4) 1.8*** (1.3-2.3)
	Navy	326, 17.0	93, 18.8	107, 12.6	526, 16.1	1.1 (0.9-1.4)	Not in model	1.1 (0.9-1.5)	1.0 (0.8-1.4)
	Air Force	574, 31.6	143, 31.1	169, 20.8	886, 28.6	Ref.	Not in model	Ref.	Ref.

Covariate	Ease of Adjustment to Civilian Life (Sample Size, Population Percent)				UOR	AOR Model 5a Socioeconomics	AOR Model 5b Socioeconomics Rank, Element	AOR Model 5c Socioeconomics Rank, Element Comorbidity, MHPs Chronic Pain
	Easy	Neither	Difficult	Total				
Physical Health Condition Comorbidity								
0 physical conditions	659, 35.7	126, 27.0	117, 17.2	902, 29.2	Ref.	Not in model	Not in model	Ref.
1	612, 32.0	147, 29.9	211, 25.6	970, 29.9	1.5** (1.2-1.8)	Not in model	Not in model	1.1 (0.8-1.5)
2	355, 18.6	109, 21.7	202, 25.3	666, 21.0	2.3*** (1.7-3.0)	Not in model	Not in model	1.2 (0.9-1.6)
3+	270, 13.6	96, 21.4	258, 31.9	624, 19.9	3.7*** (2.8-4.8)	Not in model	Not in model	1.4* (1.0-2.0)
Chronic Pain								
Yes	452, 22.8	179, 36.3	445, 54.2	1076, 33.5	3.2*** (2.7-3.8)	Not in model	Not in model	1.7*** (1.4-2.2)
No	1504, 77.2	313, 63.7	353, 45.8	2170, 66.5	Ref.	Not in model	Not in model	Ref.
Mental Health Problem (MHPs Composite Measure)								
No/Little	1523, 78.4	283, 59.8	212, 25.8	2018, 61.2	Ref.	Not in model	Not in model	Ref.
Mild/Moderate	326, 16.4	127, 25.7	268, 33.0	721, 22.4	4.1*** (3.3-5.2)	Not in model	Not in model	3.2*** (2.6-4.1)
Severe	94, 5.2	77, 14.5	302, 41.3	473, 16.4	13.8*** (10.5-18.2)	Not in model	Not in model	7.7*** (5.7-10.5)

UOR = unadjusted odds ratio, AOR = adjusted odds ratio.

*p<0.050, **p<0.010, ***p<0.001

Appendix Table 6. Adjustment to civilian life: Models adjusted for association with comorbidity of physical and mental health conditions and for type of release from service.

Covariate	Ease of Adjustment to Civilian Life (n, Wt%)				UOR	AOR Model 5d Socioeconomics Rank, Element PHC x MHC comorbidity	AOR Model 5e Socioeconomics Rank, Element Release Type	
	Easy	Neither	Difficult	Total				
Age	<30	226, 17.7	61, 18.3	70, 12.5	357, 16.4	1.6** (1.1-2.3)	2.0** (1.2-3.3)	2.3** (1.3-4.0)
	30-39	438, 20.5	106, 22.5	173, 24.4	717, 21.9	2.3*** (1.7-3.2)	2.8*** (1.9-4.2)	2.9*** (1.9-4.6)
	40-49	424, 22.8	107, 22.1	236, 30.5	767, 24.8	2.6*** (1.9-3.4)	2.8*** (1.9-4.0)	2.2*** (1.5-3.3)
	50-59	546, 26.8	165, 30.5	246, 27.1	957, 27.5	2.1*** (1.6-2.7)	2.3*** (1.6-3.2)	1.9** (1.3-2.8)
	60+	322, 12.1	54, 6.7	74, 5.5	450, 9.4	Ref.	Ref.	Ref.
Sex	Female	283, 13.0	83, 15.0	143, 15.4	509, 14.0	1.2 (0.9-1.5)	1.2 (0.9-1.5)	1.1 (0.8-1.5)
	Male	1673, 87.0	410, 85.0	656, 84.6	2739, 86.0	Ref.	Ref.	Ref.
Marital status								
	Married/common law	1570, 76.7	381, 74.5	559, 67.1	2510, 73.7	Ref.	Ref.	Ref.
	Widowed/Sep./Div.	142, 7.7	46, 10.8	98, 13.7	286, 9.8	1.80*** (1.4-2.4)	1.2 (0.9-1.7)	1.1 (0.8-1.6)
	Single, never married	244, 15.5	66, 14.7	142, 19.3	452, 16.4	1.3 (1.0-1.7)	1.1 (0.8-1.6)	1.1 (0.8-1.6)
Household Income Adequacy (quintiles)								
	Lowest 1	288, 20.0	97, 26.0	206, 31.6	591, 24.1	2.4*** (1.8-3.1)	1.3 (0.7-2.2)	1.2 (0.8-1.7)
	2	333, 18.9	100, 21.6	190, 25.4	623, 21.1	2.2*** (1.7-3.0)	1.4 (1.0-1.2)	1.2 (0.9-1.8)
	3	369, 18.8	93, 19.3	144, 19.4	606, 19.1	1.8*** (1.3-2.3)	1.4 (1.0-1.9)	1.3 (0.9-1.8)
	4	435, 22.9	90, 16.9	114, 14.0	639, 19.5	1.1 (0.8-1.4)	0.9 (0.7-1.3)	0.9 (0.6-1.3)
	Highest 5	424, 19.4	88, 16.2	85, 9.5	597, 16.2	Ref.	Ref.	Ref.
Education								
	Less than high school	72, 4.2	15, 4.7	51, 6.7	138, 4.9	2.7*** (1.7-4.1)	1.3 (0.7-2.2)	1.3 (0.7-2.3)
	High school	670, 39.8	174, 44.3	305, 43.6	1149, 41.6	2.0*** (1.6-2.5)	1.2 (0.9-1.7)	1.3 (0.9-1.7)
	Post second. non degree	594, 34.6	187, 36.9	301, 39.2	1082, 36.2	2.0*** (1.6-2.6)	1.2 (0.9-1.7)	1.3 (0.9-1.8)
	Post-secondary degree	618, 21.5	117, 14.1	138, 10.5	873, 17.3	Ref.	Ref.	Ref.
Labour Force Participation								
	Not Employed	462, 21.5	128, 24.2	324, 42.9	914, 27.7	2.0*** (1.7-2.5) 2.6*** (2.1-3.3)	1.8*** (1.4-2.3)	1.5** (1.2-2.0)
	Employed	1493, 78.5	365, 75.8	474, 57.1	2332, 72.3	Ref.	Ref.	Ref.
Rank	NCM	1290, 24.4	370, 15.5	645, 11.2	2305, 19.4	2.2*** (1.8-2.6)	1.3 (1.0-1.7)	1.2 (0.9-1.6)
	Officer	666, 75.6	123, 84.5	154, 88.8	943, 80.6	Ref.	Ref.	Ref.
Element	Army	1056, 51.4	257, 50.1	523, 66.7	1836, 55.3	1.5*** (1.2-1.8) 2.0*** (1.6-2.5)	1.3 (1.0-1.6) 1.8 (1.4-2.3)	1.2 (0.9-1.5) 1.7*** (1.3-2.3)
	Navy	326, 17.0	93, 18.8	107, 12.6	526, 16.1	1.1 (0.9-1.4)	1.1 (0.8-1.5)	1.0 (0.7-1.4)
	Air Force	574, 31.6	143, 31.1	169, 20.8	886, 28.6	Ref.	Ref.	Ref.

Covariate	Ease of Adjustment to Civilian Life (n, Wt%)				UOR	AOR Model 5d Socioeconomics Rank, Element PHC x MHC comorbidity	AOR Model 5e Socioeconomics Rank, Element Release Type
	Easy	Neither	Difficult	Total			
Physical Health Condition Comorbidity							
0 physical conditions	659, 35.7	126, 27.0	117, 17.2	902, 29.2	Ref.	Not in model	Ref.
1	612, 32.0	147, 29.9	211, 25.6	970, 29.9	1.5** (1.2-1.9)	Not in model	1.1 (0.8-1.5)
2	355, 18.6	109, 21.7	202, 25.3	666, 21.0	2.3*** (1.8-3.0)	Not in model	1.1 (0.8-1.5)
3+	270, 13.6	96, 21.4	258, 31.9	624, 19.9	3.7*** (2.8-4.8)	Not in model	1.2 (0.9-1.8)
Chronic Pain							
Yes	452, 22.8	179, 36.3	445, 54.2	1076, 33.5	3.2*** (2.7-3.8)	Not in model	1.6*** (1.2-2.0)
No	1504, 77.2	313, 63.7	353, 45.8	2170, 66.5	Ref.	Not in model	Ref.
Mental Health Problem (MHPs Composite Measure)							
No/Little	1523, 78.4	283, 59.8	212, 25.8	2018, 61.2	Ref.	Not in model	Ref.
Mild/Moderate	326, 16.4	127, 25.7	268, 33.0	721, 22.4	4.1*** (3.3-5.2)	Not in model	3.1*** (2.4-3.9)
Severe	94, 5.2	77, 14.5	302, 41.3	473, 16.4	13.8*** (10.5-18.2)	Not in model	7.2*** (5.3-9.9)
Comorbidity Dummy Variable							
No PHC or MHP	577, 31.5	99, 22.5	50, 6.8	726, 23.3	Ref.	Ref.	Not in model
PHC only	899, 46.5	173, 37.3	156, 18.0	1228, 37.2	1.4* (1.1-1.8)	1.5* (1.1-2.0)	Not in model
MHPs only	79, 4.4	26, 4.6	67, 10.7	172, 6.2	4.9*** (3.1-7.7)	4.1*** (2.5-6.5)	Not in model
PHC and MHP	328, 17.6	174, 35.6	499, 64.5	1001, 33.3	8.9*** (5.5-14.3)	6.7*** (4.1-11.1)	Not in model
					7.7*** (5.8-10.3)	6.5*** (4.8-8.9)	Not in model
					11.0*** (8.1-15.0)	8.7*** (6.2-12.0)	
Type of Release from Service							
Voluntary	1190, 60.9	252, 50.8	314, 37.8	1756, 53.0	1.8** (1.3-2.5)	Not in model	0.8 (0.5-1.3)
Medical	189, 10.3	107, 23.6	314, 39.9	610, 20.5	8.4*** (5.8-12.2)	Not in model	1.8* (1.1-3.0)
Service Complete	305, 16.5	71, 15.0	89, 12.2	465, 15.1	2.1*** (1.4-3.1)	Not in model	1.2 (0.7-1.9)
Involuntary	87, 6.0	27, 7.0	54, 8.3	168, 6.8	3.5*** (2.1-5.8)	Not in model	1.2 (0.6-2.3)
Retirement Age	180, 6.3	34, 3.7	27, 1.7	24, 4.6	Ref.	Not in model	Ref.

UOR = unadjusted odds ratio, AOR = adjusted odds ratio, PHC = self-reported diagnosed physical health condition (includes TBI, excludes chronic pain), MHPs = composite measure of mental health problem.

*p<0.050, **p<0.010, ***p<0.001