# Veterans and benefits

Relationships between social demographics, Service characteristics and mental health with unemployment and disability benefit usage by GB ex-Service personnel

Dr Howard Burdett
Dr Deirdre MacManus
Prof Nicola Fear
Prof Roberto Rona
Prof Neil Greenberg

King's College LONDON

## Acknowledgements

# Foreword

Too much debate, and even the very drawing up of policy in the sphere of veterans and their families, takes place in an echo chamber of anecdote and mythology.  At Forces in Mind Trust, we are determined that those who make decisions that affect the lives of the whole Armed Forces Community do so with the very best evidence that can be made available to hand.  In some cases, the topic might be politically inflammatory, or maybe just dull as dishwater.  It might be hard to get at the truth through inadvertent bureaucratic obstruction, or plain organizational ineptitude.

'Veterans and benefits', ably led by Dr Burdett, bounces off all 4 corners of this envelope.  By developing a ground-breaking linkage between the data held by the Department of Work and Pensions and the King's Centre for Military Health Research, this project has produced real insights into how ex-Service personnel fare when discharged.  The report not only produces clear evidence of pathways to success (and sadly sometimes to failure), but also presents sound evidence-based recommendations on where the limited resources of the State and the Third Sector can best be deployed.  At a time of economic stagnation and public-sector service reductions, ensuring that targeted, preventative action is taken wherever possible must be a key priority for policy makers and service providers alike.

As with much of the work funded by the Trust, this report presents a credible and contemporary picture of reality, and at the same time offers innovative ideas to help shape the future, and for the better.  The challenge for us all is to lend our support to making those changes, and to show how the Departmental collaboration on which this project's very existence depended, can be continued, strengthened, and used to the benefit of those most in need: the recent leavers; those with pre-enlistment disadvantage; the young and the junior; those suffering from ill health.  They deserve our support, and our Society would benefit from their successes.

Air Vice-Marshal Ray Lock CBE

Chief Executive, Forces in Mind Trust

# Contents

# Executive summary

This project involved linking welfare benefits data from the Department of Work and Pensions (DWP) with data on veterans held by the King's Centre for Military Health Research (KCMHR) cohort. The KCMHR data contained socio-demographic (e.g. age, gender etc.), service demographic (e.g. rank, combat exposure etc.) as well as information about veterans' mental health status (i.e. Posttraumatic Stress Disorder (PTSD), Common Mental Disorders (CMD) and alcohol misuse). We aimed to identify links between veterans' use of benefits[i] and the factors behind such usage.

While a substantial proportion of the 7942 regular veterans in this study used unemployment benefits to some degree, most usage was short-term and occurred in the period immediately after leaving service. Nearly a quarter (23.4%) of regular veterans in this sample received such benefits at some point over the maximum possible 12 years post-leaving in this study, but most of unemployment benefit is received shortly after leaving: nearly 7% were claiming unemployment benefits at one month after leaving, but only 1.5% were doing so two years after leaving. Disability benefits were less commonly received, with only 5% taking any, but when such benefits were received it tended to persist (1.5% received such benefits at any given point in time). These findings suggest that unemployment support is most needed and could potentially have the largest impact in the short-term, whereas those with disability-related needs may require longer-term financial support.

A number of factors were associated with claiming unemployment benefits. These included being male, lower rank at the time of leaving service, ex-Army, shorter-serving, leaving in an unplanned manner and being less-educated, as well as having claimed unemployment benefits before service. Anti-social behaviour in childhood also increased risk of claiming unemployment benefits as a veteran. Some factors were similar when examining disability benefits, with those of shorter service, lower rank, and having received disability benefits before service all predicting post-service disability benefit receipt, with the additional predictor of having been medically discharged.

In general, veterans with mental health disorders had a higher likelihood of claiming benefits. While associations with unemployment benefits were modest, post-service PTSD and CMD were strongly associated with disability benefit receipt. A large proportion of veterans who received disability benefits reported suffering mental health difficulties, and we found that a remission from mental disorder was associated with a reduction in receiving disability benefits; this suggests that enhancing support or successful treatment of those with PTSD and CMD who are claiming disability could yield benefits. This was not the case for unemployment benefits which were not affected by remission from mental health disorder.

One unexpected finding was that alcohol misuse was only moderately associated with post-service unemployment benefit receipt and there was no association with disability benefit. Additionally, remission of alcohol misuse did not reduce risk of claiming benefits.

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[i] Note that this study utilises benefits data only, and does not take into account pension payments, War Pension, part-time or self-employed labour, etc.

# Glossary

| | |
|---|---|
| **CMD** | Common mental disorders, defined in this study as having a score of 4 or more on the 12-item General Health Questionnaire |
| **CO** | Commissioned Officer |
| **CSS** | Combat Service Support |
| **DWP** | Department for Work and Pensions |
| **ESL** | Early Service Leaver (i.e. leaving before completing their initial term of service). Note that in this study, ESLs do not include those with compulsory discharge (as would usually be included in the definition) in order to separate 'period of service' from 'method of leaving' for analytic purposes. |
| **Ex-Service personnel** | An individual who has served at least one day in the UK Armed Forces. Note that this is used interchangeably with the term "veteran" throughout |
| **KCMHR** | King's Centre for Military Health Research |
| **NCO** | Non-Commissioned Officer |
| **PTSD** | Post-traumatic stress disorder, defined in this study as having a score of 30 or more on the National Centre for PTSD Checklist (a relatively sensitive cut off, indicative of possible rather than probable PTSD) |
| **RAF** | Royal Air Force |

Glossary

# 1. Background

Re-employment is central to the successful transition of most Service leavers as they re-enter civilian life. Employment provides a stable income, improved self-esteem and has been shown to be a key factor for good mental health within the general population [1]. Numerous charitable organisations provide services for veterans in respect of their mental health and employment status. Furthermore, the current resettlement provision for Service leavers emphasises re-employment as a key aspiration. However, little is known about medium- to-long-term employment outcomes for UK Service leavers, or their relationship with mental health status. Additionally, there is a lack of evidence about veterans' use of welfare benefit payments which are an essential component of support for those who cannot find work, particularly if due to disability.

There is strong evidence that unemployment and mental health are interrelated in the general population[1], but there is limited knowledge of how these variables affect the wellbeing of the UK veteran population. Previous research in these areas, for example by the Career Transition Partnership[2] and the Royal British Legion[3], has not included analysis of the factors driving unemployment or benefit-seeking, in particular the relationship with mental health, alcohol misuse and perceived functional impairment. Other research has focused on populations in particular at-risk contexts (e.g. among those already presenting with mental health conditions), which limits generalisability[4]. Furthermore, such research often relies on ex-Service personnel identifying themselves as veterans, which they may choose not to do; this is particularly true for younger veterans[5]. Reliance on self-reported employment situations may also have produced distorted estimates of veteran unemployment, as some veterans might be reluctant to acknowledge unemployment or might have reported unpaid work incorrectly.

This report describes the findings from a study which, for the first time, linked records from the King's Centre for Military Health Research (KCMHR) cohort study (which includes data from around 11,000 former members of the UK Armed Forces who first entered the cohort while still in service, from 2003 to 2016), with Department of Work and Pensions data on the unemployment and disability benefit usage of the same individuals[ii]. By making use of this administrative rather than self-reported data, and by using a sample group of former members of the UK Armed Forces from the KCMHR cohort study we were able to:

- access objective and unbiased data on the use of unemployment and disability benefits among the veteran population
- investigate how benefit usage and mental health are interrelated
- assess the effects of other personal characteristics, and pre-service and service-related factors.

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[ii] But not data on pensions, self-employment etc. See Appendix 1 for further details of the cohort and the data collection process.

## 2. Benefit usage among ex-Service personnel

### 2.1 Which types of benefits are being used by veterans?

Table 1 gives the overall receipt of benefits by UK regular veterans[iii] in the KCMHR cohort. These veterans left service between March 2003 and October 2016, and hence represent a relatively recent group of working-age veterans. With the exception of unemployment-related benefits, few claim benefits before joining the military; however, nearly a quarter (23.4%) claim unemployment-related benefits after leaving, and 5.3% receive disability benefits to substitute for income at some point after leaving.

*Table 1 Overall use of benefits by UK regular veterans (for any duration, at any time before or after serving)*

| Benefit type | Any pre-service usage (%) | Any post-service usage (%) |
|---|---|---|
| Unemployment[iv] | 973 (12.3) | 1,857 (23.4) |
| Income Support | 70 (0.9) | 82 (1.0) |
| Income-replacing disability[v] | 57 (0.7) | 417 (5.3) |
| Extra costs disability[vi] | 15 (0.2) | 230 (2.9) |

For the remainder of the study, we did not analyse income support or extra costs disability payments intended to contribute towards the extra costs of having a long-term health condition. This decision was made due to both low numbers of service members claiming these benefits, and also because it is more difficult to draw conclusions regarding the context in which these benefits are claimed. Thus, where the term "unemployment benefits" is used it refers only to the first row of the table above, and where "disability benefits" is used it refers only to the third row of the table above (i.e. acting as a substitute for salary, rather than as a "top up").

It is possible for an individual veteran to claim both disability and unemployment benefits at some point in time. Usage of either or both forms of benefit is shown in Figure 1 (page 9); the upper pie chart shows pre-service benefit receipt, and the lower pie chart shows post-service benefits. Note that for both pie charts the overlap between benefit types is not necessarily concurrent, as the data presented includes benefit type claims at any time. Disability benefit receipt is low pre-service, with 0.6% claiming disability benefits alone and 0.1% claiming both disability and unemployment benefits at some time. Notably, of all those in the lower pie chart who receive post-service disability benefits (a combined total of 5.2%), around half (2.5%) also claim unemployment benefits at some point post-service.

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[iii] This report refers only to ex-regulars who were not serving as reserves at the time of data collection
[iv] Comprises Job Seeker's Allowance and Universal Credit
[v] Comprises Employment and Support Allowance, Incapacity Benefit, and Severe Disablement Allowance
[vi] Comprises Personal Independence Payment and Disabled Living Allowance

**Pre-service benefit receipt**

0.6%
0.1%
11.6%
87.7%

- None
- Unemployment
- Disability
- Both



**Post-service benefit receipt**

2.5% 2.7%
20.7%
74.1%

- None
- Unemployment
- Disability
- Both
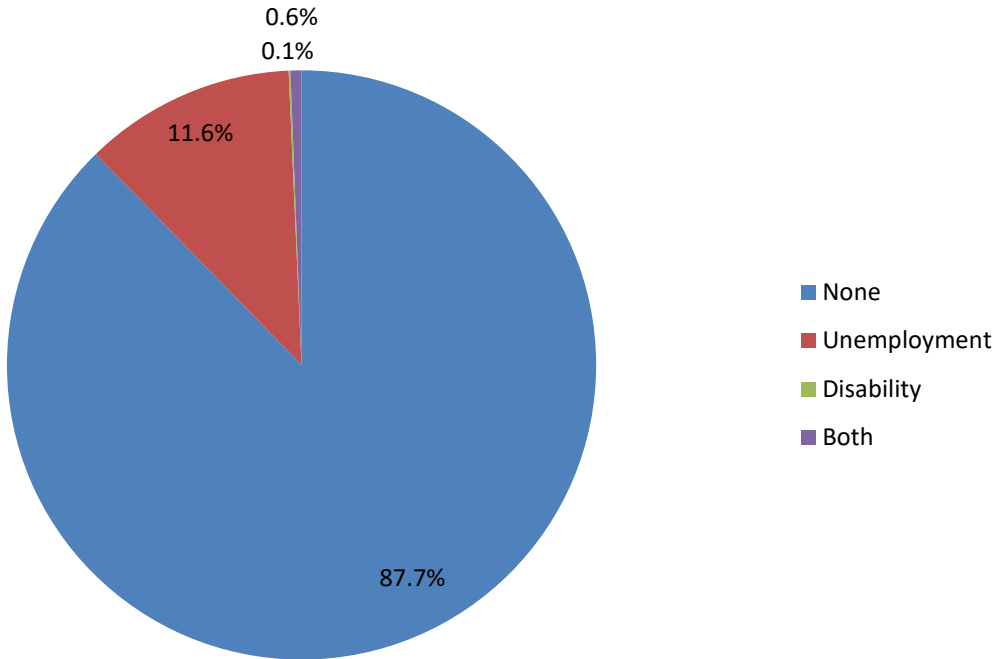
*Figure 1 Overlap between unemployment and disability benefits*

## 2.2 Degree of benefit usage



KEY POINTS

- 23.4% of veterans claimed unemployment benefits at some point since leaving, and 5.2% claimed disability benefits
- However, unemployment benefit receipt was generally short-term, whereas disability benefit receipt was more likely to be longer-term

Table 2 shows, for each individual, how many days of benefits they have taken both before and since leaving service (up to October 2016). As can be seen, comparatively few have received post-service unemployment benefits for more than one year; of the subset that claimed at least one day's post-service unemployment benefit, only 11.5% received a year or more in total (whether contiguous or not). However, a comparatively larger percentage of those who received post-service disability benefit did so for more than one year (44.2% of all benefit disability users), probably reflecting that disabilities for which benefits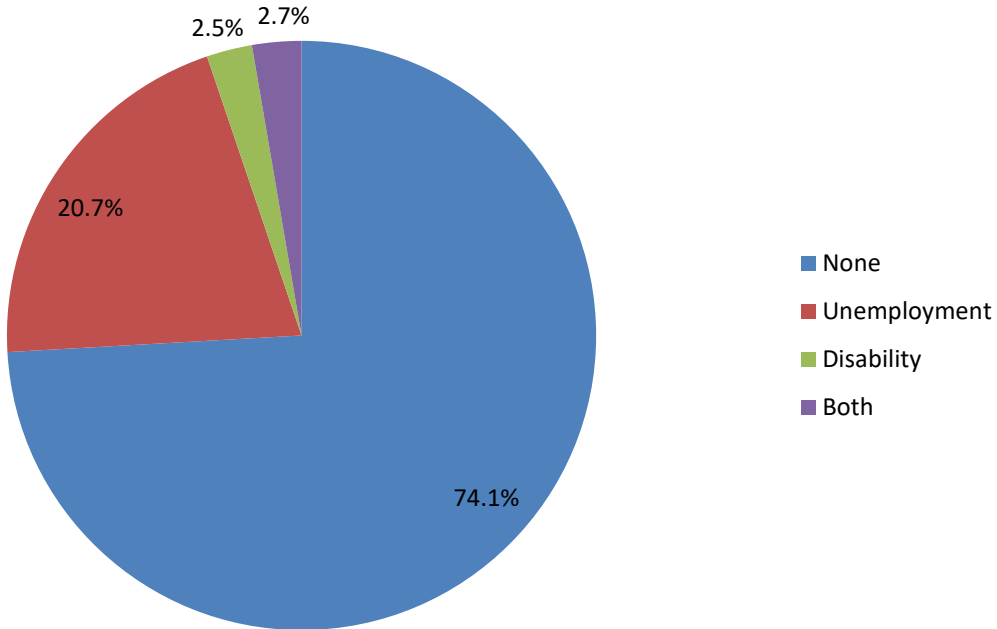 are received are likely to be longer-term. Pre-service unemployment benefit receipt is less common than post-service unemployment benefit use, but this is reflective of the shorter period at risk. Pre-service disability receipt is rare, as would be expected given the fitness requirements for joining the Forces.

*Table 2 Days of benefit usage*

| Time period | Pre-service unemployment (%) | Post-service unemployment (%) | Pre-service disability (%) | Post-service disability (%) |
|---|---|---|---|---|
| **0** | 6,969 (87.8) | 6,085 (76.6) | 7,885 (99.3) | 7,525 (94.8) |
| **Up to 1 month** | 153 (1.9) | 393 (5.0) | 1 (0.0) | 10 (0.1) |
| **> 1 - 3 months** | 225 (2.8) | 535 (6.7) | 18 (0.2) | 53 (0.7) |
| **> 3 months to 1 year** | 416 (5.2) | 714 (9.0) | 28 (0.4) | 175 (2.2) |
| **> 1 year** | 179 (2.3) | 215 (2.7) | 10 (0.1) | 179 (2.3) |

## 2.3 Benefit dependency

We also identified benefit dependency among veterans, as measured by taking three years of benefits (not necessarily contiguously) out of the most recent four years[vii]. By this measure, no veterans in this sample were dependent on unemployment benefits, while 0.9% of veterans were dependent on disability benefits for this period.

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[vii] As a consequence, a minority of the sample who had been out of service less than 4 years were excluded. Three years of benefit usage out of four was selected as it is utilised by the Department for Work and Pensions in their reports on the duration of working-age benefits in Great Britain.

## 2.4 Trends in benefit usage

To gain additional insight into benefit receipt over time, the proportion of veterans claiming benefits at each of a series of time points since leaving was determined. The resulting trends in usage by time since leaving are shown below.

### Unemployment benefits

*Overall*

Figure 2 shows, for the entire sample, the proportion receiving unemployment benefits at a series of time points since leaving the services. As can be seen, unemployment claims peak in the short term, and then decrease to reach an effective floor of around 1.5% after 2 years (note that there were few veterans in the sample who had left 10 or more years ago, so the apparent drop at 10 years is not evidence of anything other than chance fluctuation).
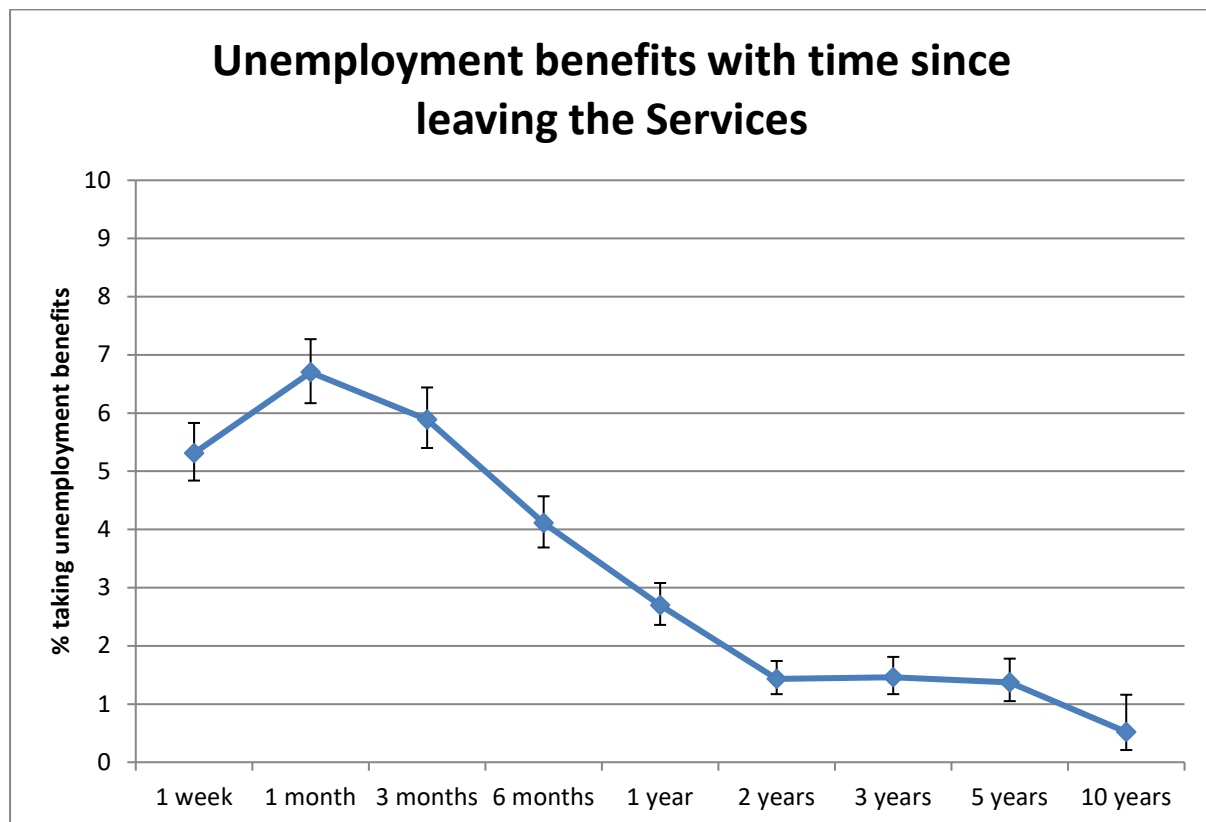


*Figure 2 Unemployment benefits with time since leaving (including 95% confidence intervals; note horizontal axis is categorical, and not to scale)*

### Unemployment by rank

As a proxy for socioeconomic status[6], we also considered prevalence of unemployment benefit receipt over time by rank (Figure 3). Within each rank category, the trend was similar to the overall trend, with unemployment peaking in the short term and dropping to a more stable period around 2 years after leaving (apparent variations beyond this point in the figure are due to fluctuations based on small numbers). For Commissioned Officers (Figure 3, 'CO'), unemployment drops to effectively

zero from the 2-year point. For private-equivalent ranks (Figure 3, 'Private-equivalent'), however, unemployment benefit receipt stabilises at 3-4%.
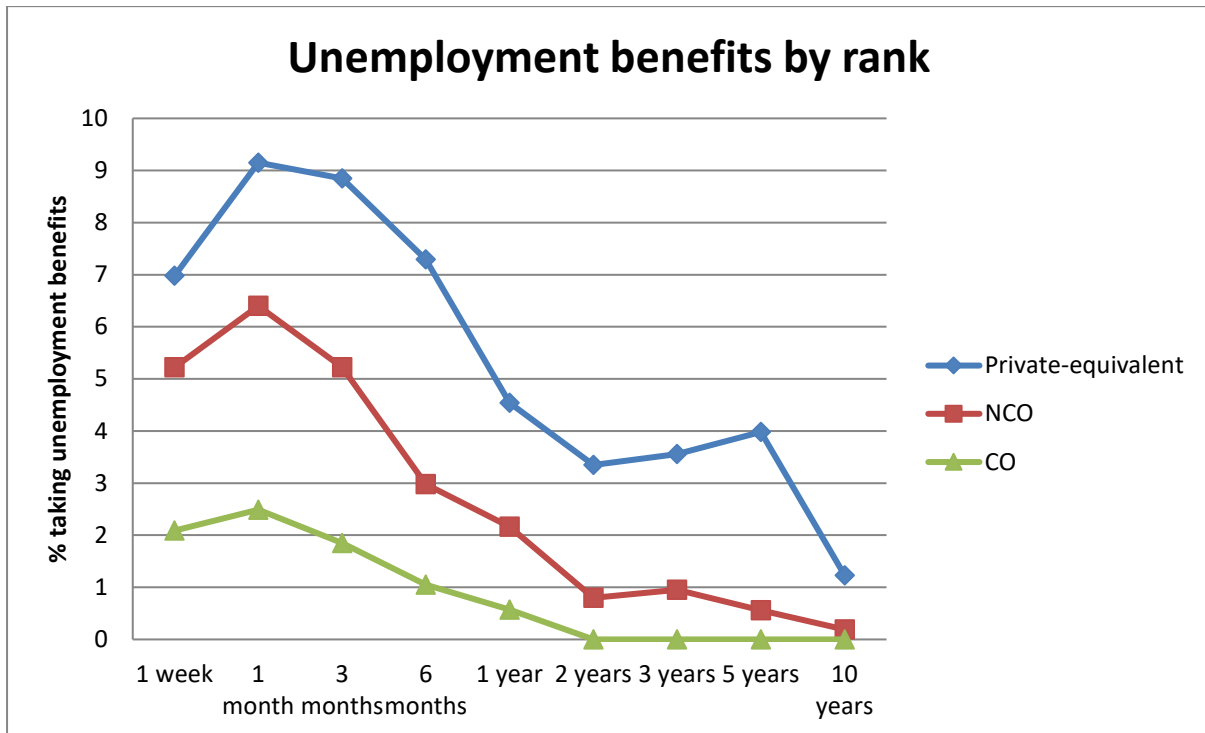


*Figure 3 Unemployment benefit usage with time since leaving by rank*

## Disability benefits

By contrast with unemployment benefits, disability benefit receipt is relatively stable over time (Figure 4). Thus, while disability benefit receipt overall is lower than unemployment receipt (i.e. remaining between 1-2%, whereas in Figure 2 unemployment receipt peaks around 7%), it is more persistent.
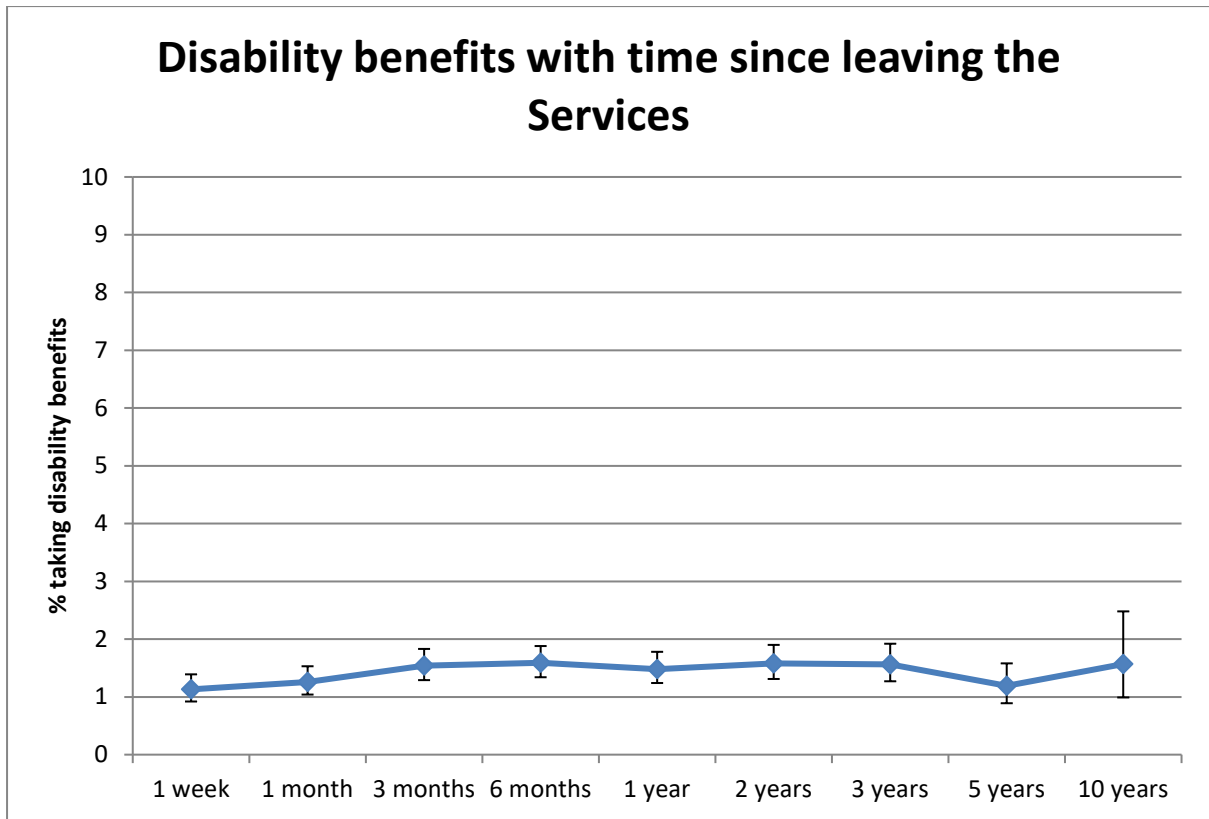


*Figure 4 Disability benefits with time since leaving (including 95% confidence intervals)*

*Disability by rank*

As before, we used rank as a proxy for socioeconomic status to determine how disability receipt changes over time between rank groups. As with unemployment, those in higher rank groups made fewer disability claims across the entire period at risk (Figure 5). Commissioned Officers made almost no use of disability benefits, whereas around 1% of NCOs were claiming disability benefits at any time and around 2.5% of private-equivalent ranks were claiming disability benefits.
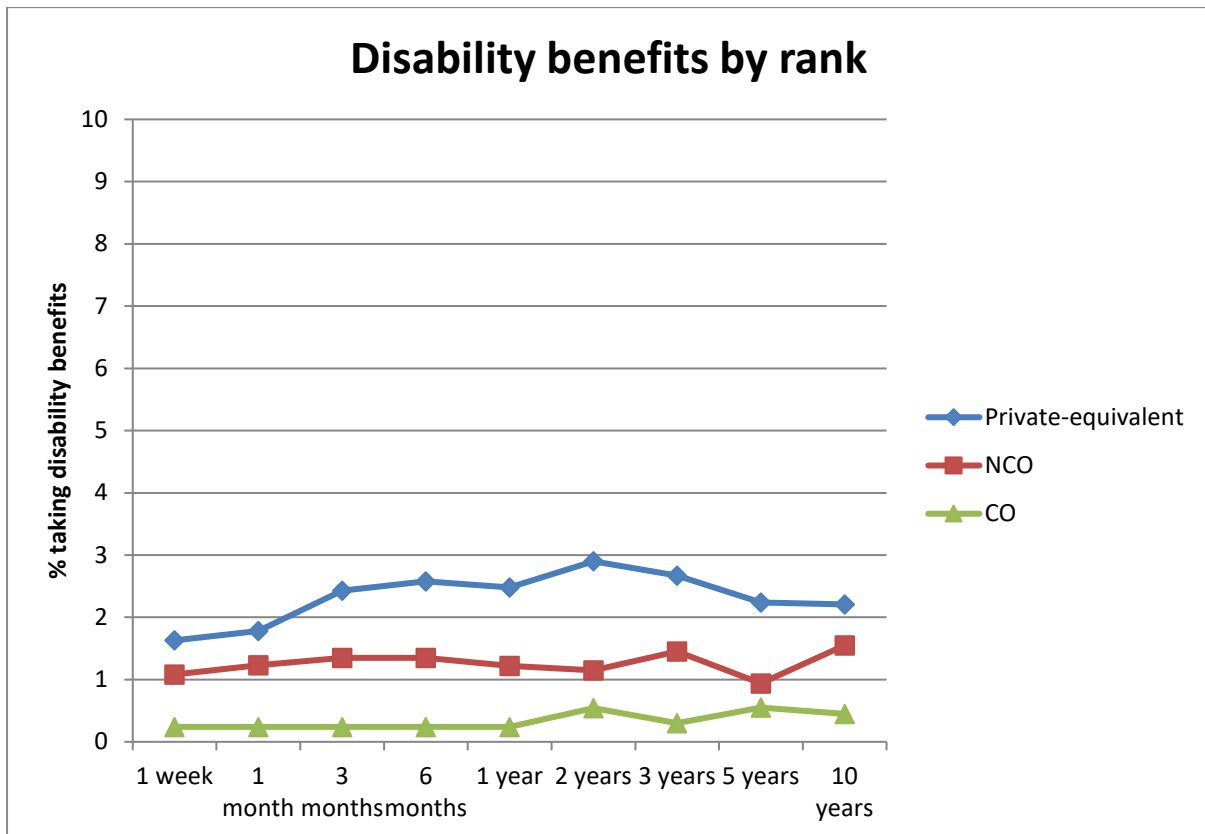


*Figure 5 Disability benefit usage with time since leaving by rank*

## 2.5 Comparisons with civilian population

A comparison between UK veterans and the general civilian population are shown in Table 3, at the latest available date of comparison (October 2016). This comparison should be approached with caution and the results should be taken as tentative because civilian rates were generated using more than one public data source from DWP and the Office of National Statistics, and different methods of data collection were used by different data sets. Furthermore, although the data presented is separated by age and sex, there are many other demographics by which veterans and civilians differ which are not accounted for in this table (e.g. childhood socio-economic status). Note also that numbers of veterans in the sample of 45 years of age and higher are low. For these reasons, statistical comparisons have not been made. The data suggest that veterans are, at the very least, not at higher risk of benefit claims than the general population.

*Table 3 Comparison of benefits between veterans and the general population*

| Age | Unemployment benefit (%) | | Disability benefit (%) | |
|-----|---------|-------------------|---------|-------------------|
| *Male* | | | | |
| | *Veteran* | *General population* | *Veteran* | *General population* |
| **18-24** | 0.82 | 3.42 | 2.20 | 2.38 |
| **25-34** | 0.64 | 2.69 | 2.24 | 3.09 |
| **35-44** | 0.59 | 2.16 | 1.64 | 4.02 |
| **45-54** | 0.09 | 2.01 | 0.37 | 5.01 |
| **55-64** | 0 | 2.01 | 0 | 5.97 |
| *Female* | | | | |
| | *Veteran* | *General population* | *Veteran* | *General population* |
| **18-24** | 1.01 | 2.17 | 3.03 | 2.18 |
| **25-34** | 1.19 | 1.62 | 2.37 | 2.65 |
| **35-44** | 0.47 | 1.42 | 0.47 | 3.48 |
| **45-54** | 0 | 1.37 | 0 | 4.86 |
| **55-64** | 0 | 1.21 | 0 | 5.24 |

# 3. Service and socio-demographic factors

## 3.1 Risk and protective factors for post-service unemployment

Socio-demographic (e.g. gender, education) and service-related (e.g. rank, length of service) factors affecting likelihood of post-service unemployment claims are shown in Figure 6 on page 18.

As regards socio-demographic factors and post-service unemployment, analysis showed that:

- females were less likely than males to claim unemployment benefits;
- having higher educational attainment than GCSE-level (the reference group) was protective, but there was no difference between those who attain GCSE-level education and those who leave school without any formal qualifications;
- pre-enlistment anti-social behaviour (e.g. truancy, getting into trouble as a child) was predictive of unemployment benefit receipt, while family adversity (e.g. lack of close family, violent/abusive family situation) was not[viii]; and
- those who received unemployment benefits before joining up were more likely to claim such benefits after leaving, but those with a history of pre-service disability benefits were not[ix].

Many service-related factors were significantly associated with claiming post-service unemployment benefits:

- in comparison to Non-Commissioned Officers (the reference group), Commissioned Officers were less likely to claim unemployment benefits, while private-equivalent ranked personnel were more likely to do so;
- those in the Naval Services and RAF were less likely to claim unemployment benefits than those in the Army;
- unplanned leavers (i.e. those who leave involuntarily before the intended end of their service term, excluding medical discharge) were slightly more likely to claim unemployment benefits than those with a planned discharge, but receiving a medical discharge did not make a difference[x]. The former finding may be indicative that, with less opportunity to plan for their transition, unplanned leavers take more time to find employment. The implications of the latter finding are unclear; it is possible that those leaving with serious medical issues claim disability rather than unemployment benefits, while less serious issues do not prevent re-employment.
- Longer service was generally predictive of reduced unemployment benefit receipt, but there was no difference between ESLs and those who, as a minimum, completed their first term of service (i.e. those who left between 4 and 11 years, the reference group in Figure 6)[xi].

Note that the associations reported above were independent of one another.

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[viii] Note that, while it initially appeared that childhood family adversity was associated with unemployment benefits, this effect was explained by pre-enlistment antisocial behaviour and rank.

[ix] The apparent relationship between preservice disability benefit and post-service unemployment benefit was mitigated by taking into account preservice unemployment benefit.

[x] While receiving a medical discharge appeared to be associated with taking unemployment benefits; the apparent relationship was removed primarily by adjusting for rank, which also reduced (but did not remove) the effect on unplanned leaving of unplanned discharge.

[xi] Although Early Service Leavers were more likely to claim unemployment benefits in the univariate analysis, this effect was mitigated by any of a number of factors in the adjusted model, notably including education.

No differences were detected between roles[xii], and deployment to Iraq and/or Afghanistan slightly reduced risk.

Overall, however, it should be noted that those associations which were significant were nonetheless of mild effect size[xiii], with the exception of being a Commissioned Officer.

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[xii] Those in non-combat roles appeared to be less likely to claim unemployment benefits after leaving, but this effect was removed primarily by adjusting for rank. For more details on roles see Appendix 1.

[xiii] The charts in Figures 6 and 7 show hazard ratios, which can be considered the comparative risk of the outcome at any time point. A hazard ratio of 2 or lower can be generally be considered a mild effect.
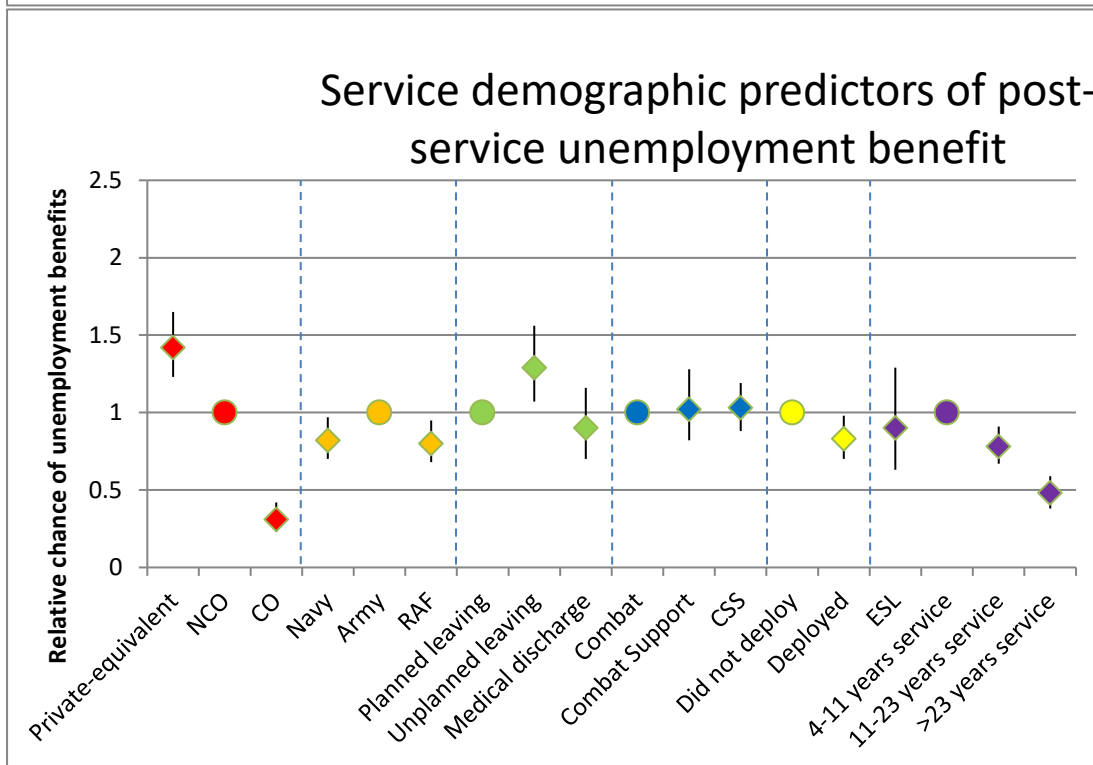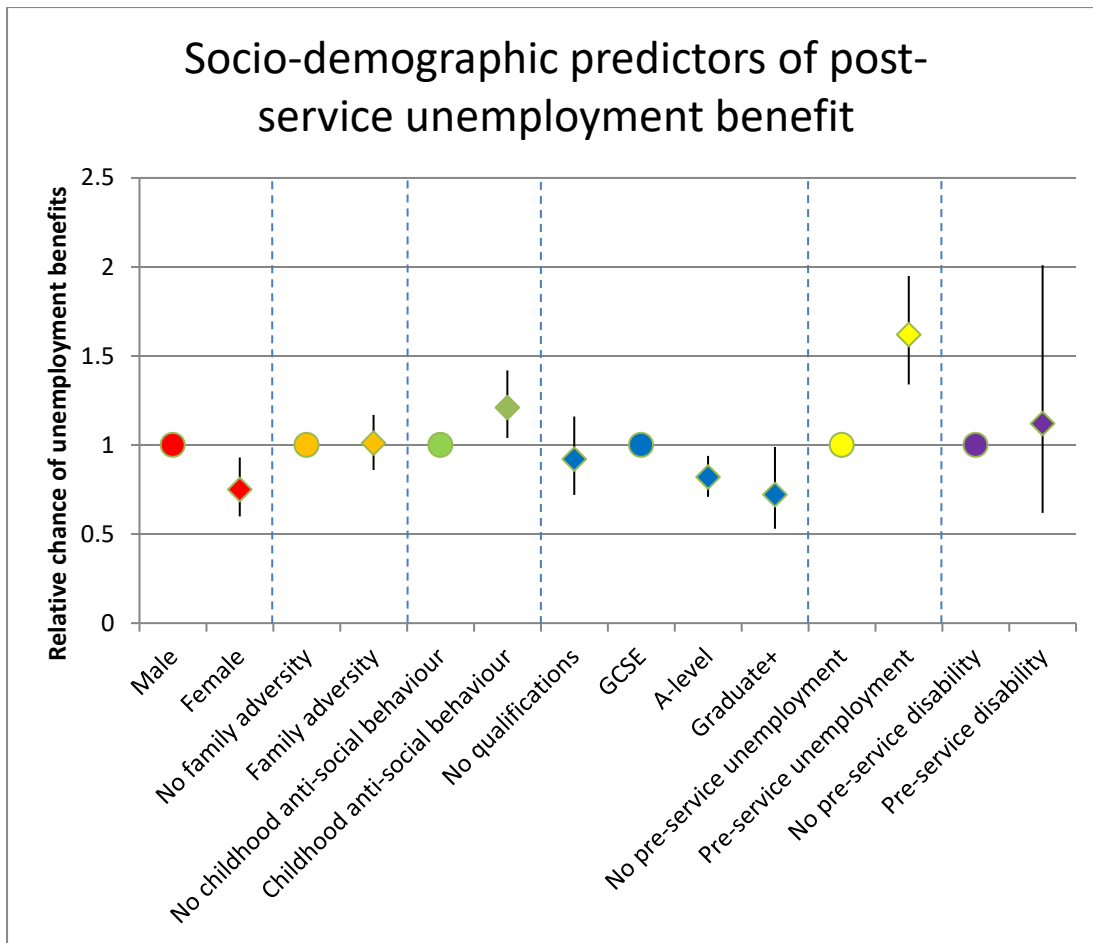
*Figure 6 Risk and protective factors for post-service unemployment benefits; where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group (circle), and where lower than 1 that group is at lower risk, with greater distance from the reference group indicates greater effect*

## 3.2 Risk and protective factors for post-service disability

Socio-demographic factors associated with post-service disability benefit are different from those associated with post-service unemployment benefit (Figure 7)[xiv]. There were no differences found between males and females, and no significant associations with pre-enlistment vulnerability measures or pre-service unemployment benefit, though there was an association with pre-service disability benefit.

By contrast, service-related predictors of post-service disability benefit shared things in common with the service-related predictors of post-service unemployment benefits:

- lower ranks were more likely to claim benefits
- those who had left the Naval Services were less likely to claim disability benefits than those from the Army (though being from the RAF was not a factor[xv])
- unplanned leaving was not predictive of claiming disability benefit[xvi], but receiving a medical discharge was a strong risk factor
- those who remained in service for longer were at lower risk, and (as before) there was no elevated risk for ESLs compared to the reference group who served 4-11 years[xvii]

Overall, most associations were relatively weak again, with the exceptions of pre-service disability benefit[xviii] and medical discharge.

KEY POINTS

- The only **socio-economic factor associated with receiving post-service disability benefits** was receiving disability benefits before joining
- **Military** factors **associated with post-service disability claims** included lower rank, not serving in the Naval Services, shorter service, and medical discharge
- Most associations were modest, but a history of **pre-service disability benefits** and **medical discharge** had strong effects

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[xiv] Response-weighted and adjusted as in Figure 6.
[xv] The effect of being ex-RAF was removed by adjustment for education and length of service.
[xvi] After adjustment for educational attainment.
[xvii] After adjustment for method of leaving and role.
[xviii] Note that, as indicated in Table 1 on page 10, this only applies to a small number of veterans; Joint Service Publication 950 includes details of medical employability standards for recruitment

## Socio-demographic predictors of post-service disability benefit

Relative chance of disability benefits

Male, Female, No family adversity, Family adversity, No childhood anti-social behaviour, Childhood anti-social behaviour, No qualifications, GCSE, A-level, Graduate+, No pre-service unemployment, Pre-service unemployment, No pre-service disability, Pre-service disability

## Service demographic predictors of post-service disability benefit

Relative chance of disability benefits

Private-equivalent, NCO, CO, Navy, Army, RAF, Planned leaving, Unplanned leaving, Medical discharge, Combat, Combat Support, CSS, Did not deploy, Deployed, ESL, 4-11 years service, 11-23 years service, >23 years service

*Figure 7 Risk and protective factors for post-service disability benefit; where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group (circle), and where lower than 1 that group is at lower risk*

## 3.3 Unemployment usage in the early years since leaving

To examine how the degree of benefits receipt varies according to socio-economic and service-related factors, differences between the number of days of benefits received were calculated within the first and second years post-service[xix]. Disability benefit was not considered as receipt is essentially flat over time.

In the first year after leaving, most factors associated with higher benefit receipt were similar to those factors associated with overall risk of unemployment benefit[xx]; specifically, being male, having a history of pre-enlistment unemployment benefits, having lower rank, unplanned leaving, and leaving before completing four years of service (Figure 8).

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[xix] Days of benefit receipt in the first two years, rather than total benefit receipt, was used to avoid issues to do with changes in usage over time. We did not examine benefit receipt after the first two years as few take any unemployment benefits after the first two years, and disability benefits are relatively unchanging over time.
[xx] Unlike the previous figure, these charts used Incidence Rate Ratios (IRRs). IRR refers to the comparative rate of occurrence (i.e. relative number of days of benefit usage).

Socio-demographic predictors of post-service unemployment benefit in the first year after leaving service

Service demographic predictors of post-service unemployment benefit in the first year after leaving service
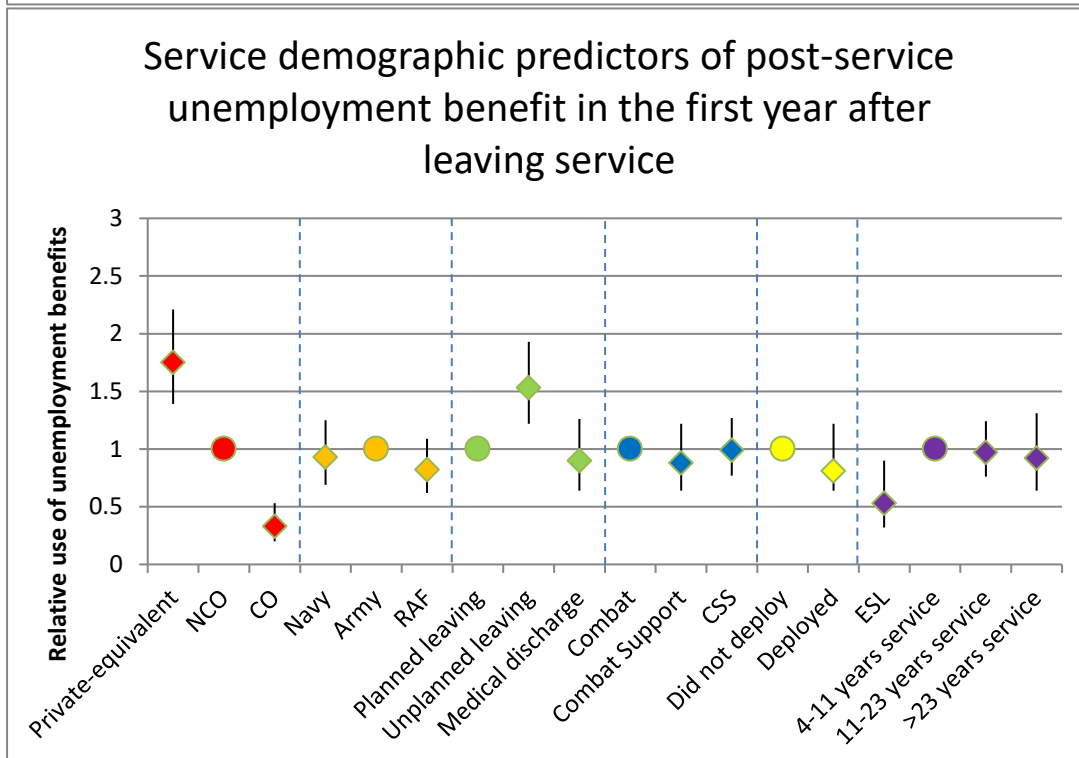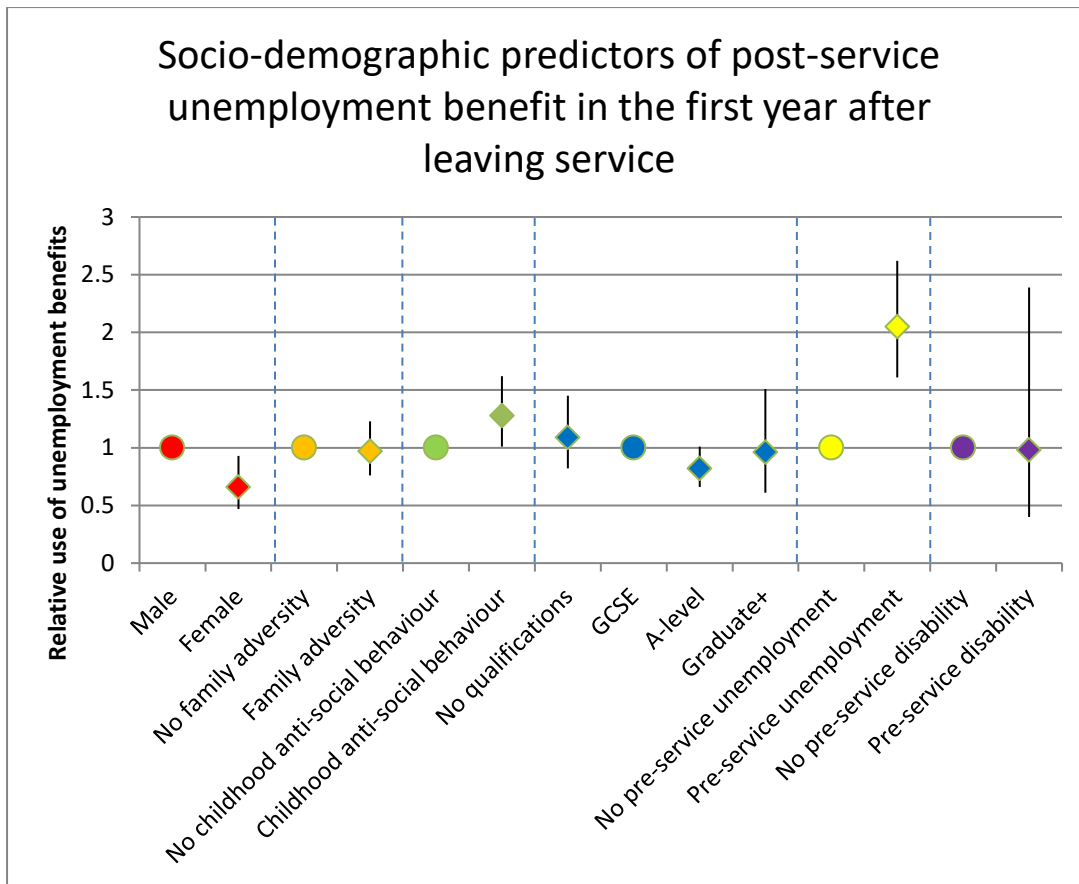
*Figure 8 Degree of unemployment benefit receipt in first year after leaving; where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group (circle), and where lower than 1 that group is at lower risk*

However, by the second year (Figure 9), some factors had changed: gender was no longer relevant, and nor was having a private-equivalent rank (though former Commissioned Officers still took less unemployment benefits). Those in the Naval Services and RAF claimed less benefit in the second year, as did those who had deployed to Iraq or Afghanistan.

Longer service was a strong protective factor against extended benefit claiming in the second year. Unplanned leaving was still a factor for higher benefit receipt, however, as were pre-enlistment vulnerability factors (particularly anti-social behaviour). Prior benefit receipt was not a predictor of greater benefit usage in the second year.

*Figure 9 Degree of unemployment benefit receipt in second year after leaving (pre-service disability benefit not shown due to large confidence interval); where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group (circle), and where lower than 1 that group is at lower risk*

# 4. Mental health and benefit payments

## 4.1 In- and post-service mental health and benefit usage

We assessed how in-service mental health[xxi], physical health[xxii] and alcohol misuse[xxiii] predicted post-service unemployment benefit receipt, and also how post-service mental health and alcohol use was related (Figure 10). In-service and post-service mental health and alcohol misuse, and poor in-service physical health[xxiv], resulted in increased risk of claiming unemployment benefits after leaving service, but the associations were weak (below a hazard ratio of 2).
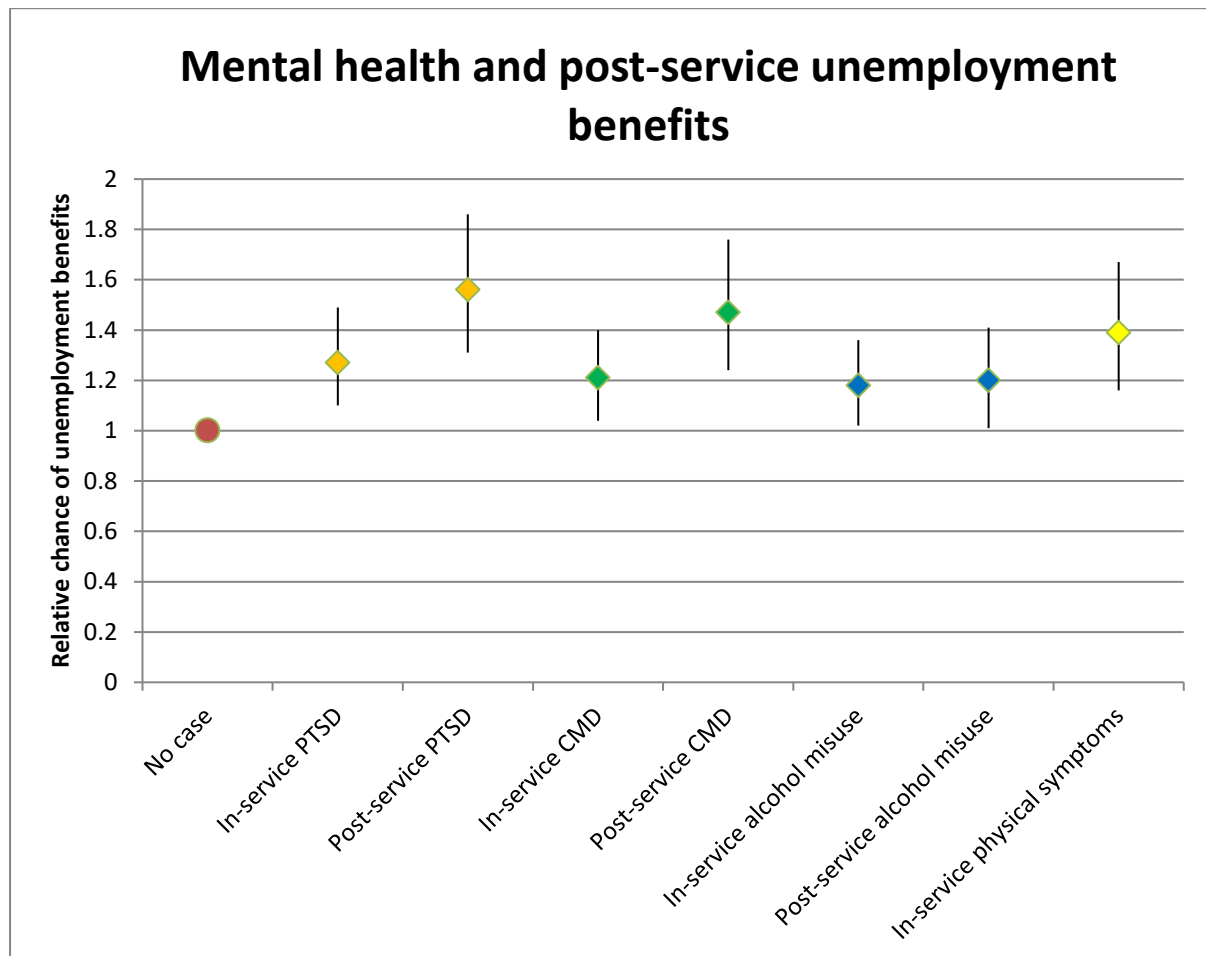


*Figure 10 Associations between mental and physical health and unemployment benefit. Where error bar is above 1, a group (diamond) is at higher risk than the indicated reference group ("no case", circle), and where lower than 1, that group is at lower risk*

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[xxi] Using self-report questionnaires for PTSD symptoms (the National Centre of PTSD Checklist, with a case defined as scoring 30 or more) and for common mental disorders (based on the 12-item General Health Questionnaire, with a case defined as scoring 4 or more)
[xxii] Determined by self-reporting multiple physical symptoms
[xxiii] Using the World Health Organization Alcohol Use Disorders Identification Test with a cut-off of 8 defining alcohol misuse
[xxiv] Post-service physical health was not surveyed as comprehensively, so is not included here

With regards to disability benefits, in-service mental and physical health still predict post-service benefit receipt with moderately strong associations[xxv], but alcohol misuse in-service does not have the same effect (Figure 11). Post-service mental health status had a strong association with disability benefit, but alcohol misuse did not. It is also notable that, while the population attributable fractions[xxvi] of these factors for unemployment benefits were all below 0.16, this rose to above 0.5 for post-service mental health (Appendix 4), indicating a large proportion of those using disability benefits have mental health difficulties, and successful treatment of the mental health issues might reduce disability benefit claims.
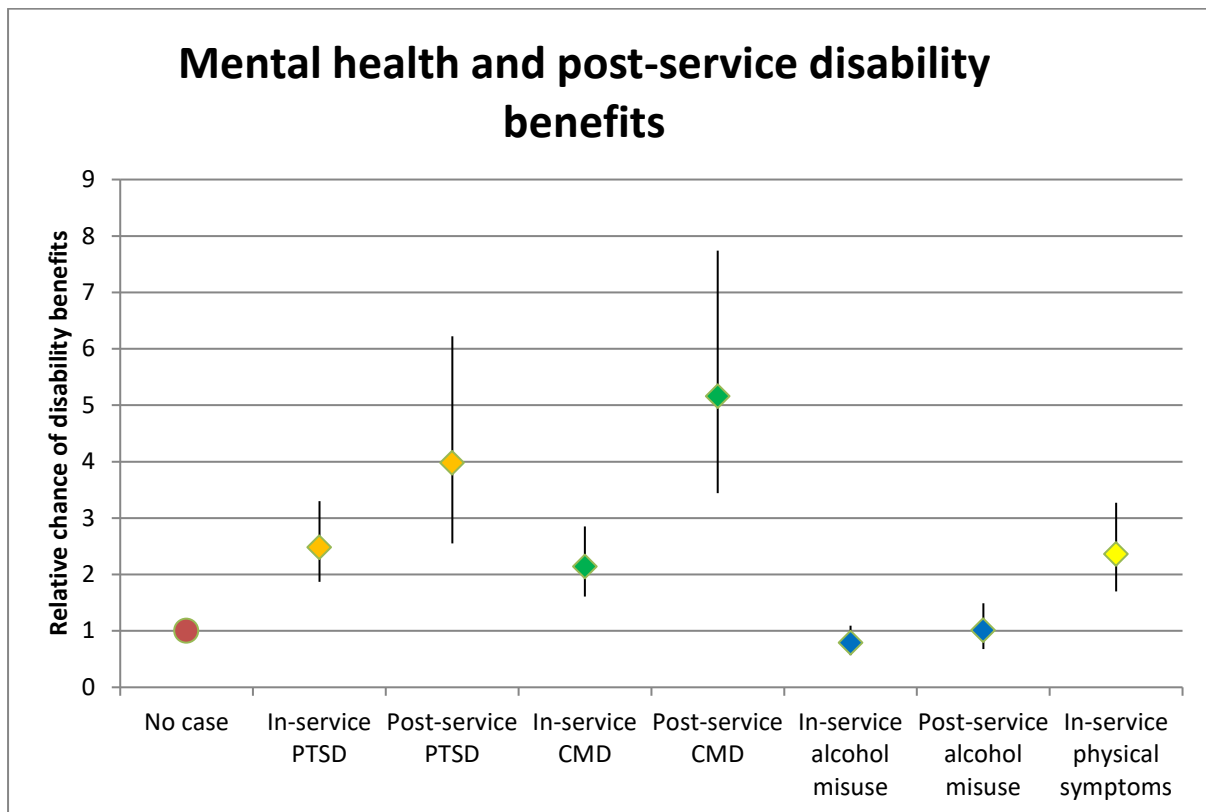


*Figure 11 Associations between mental and physical health and disability benefit; where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group (circle), and where lower than 1 that group is at lower risk*

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[xxv] i.e. hazard ratios greater than 2 and reaching 5
[xxvi] The contribution of the factor (in- or post-service mental disorder or alcohol misuse) to the outcome (benefit usage), and thus the hypothetical proportional reduction in the outcome that would occur if the factor were alleviated

## 4.2 Change in mental health status and benefit usage

We also analysed how changes in mental health between in-service and veteran life were related to benefit claims. We compared those who had reported mental health difficulties in service but who had subsequently recovered ('remitted', used as the reference group) with those who had not had mental health difficulties either in service or post service (the "no case" group), those who had become symptomatic after leaving service (the "new case" group), and those who had reported mental health difficulties at both time points (i.e. both in and post service - the "persistent" group)[xxvii].

No group showed any difference on unemployment benefit receipt compared to the reference group, with the exception that persistent CMD and PTSD were mildly associated with claiming unemployment benefits compared with those who improve. Overall this indicates that changes in mental health had little impact on post-service unemployment benefit use (Figure 12).



*Figure 12 Mental health change over transition and use of unemployment benefit; where error bar is above 1 a group (diamond) is at higher risk than the indicated reference group ('remitted', circle), and where lower than 1 that group is at lower risk*

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[xxvii] Note that, as explained in Appendix 1, many filled questionnaires at only one time point (before or after leaving service), so the population described here is a subset of the preceding analysis.

There were several associations between mental health change group and disability benefits (Figure 13). While those who were no longer probable PTSD cases were still more likely to claim disability benefits than those who had never suffered from PTSD, they were less likely than those who had persistent PTSD (i.e. had not recovered). This pattern of effect was also detectable as regards sufferers of common mental disorders, although those in the remitted class more likely to receive disability benefit than new CMD cases. A change in level of alcohol misuse did not affect likelihood of claiming disability benefit.

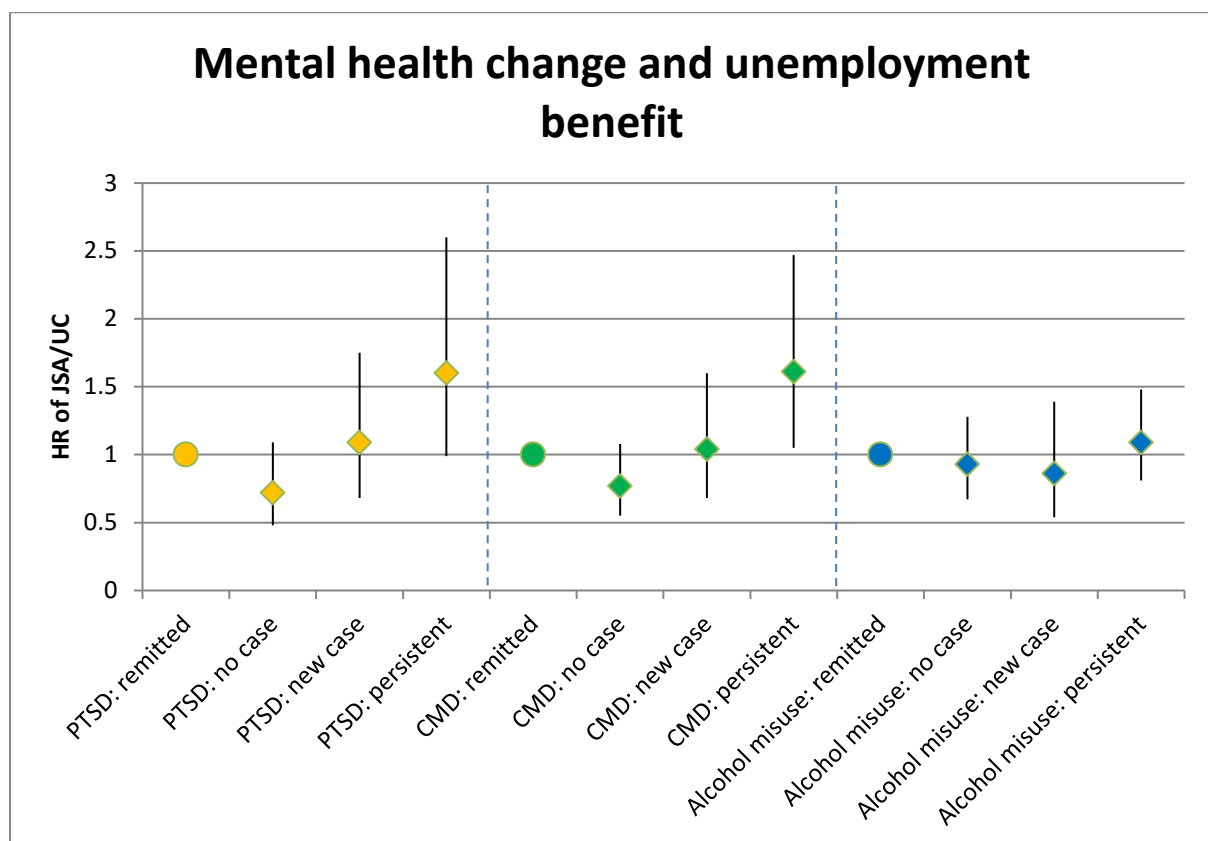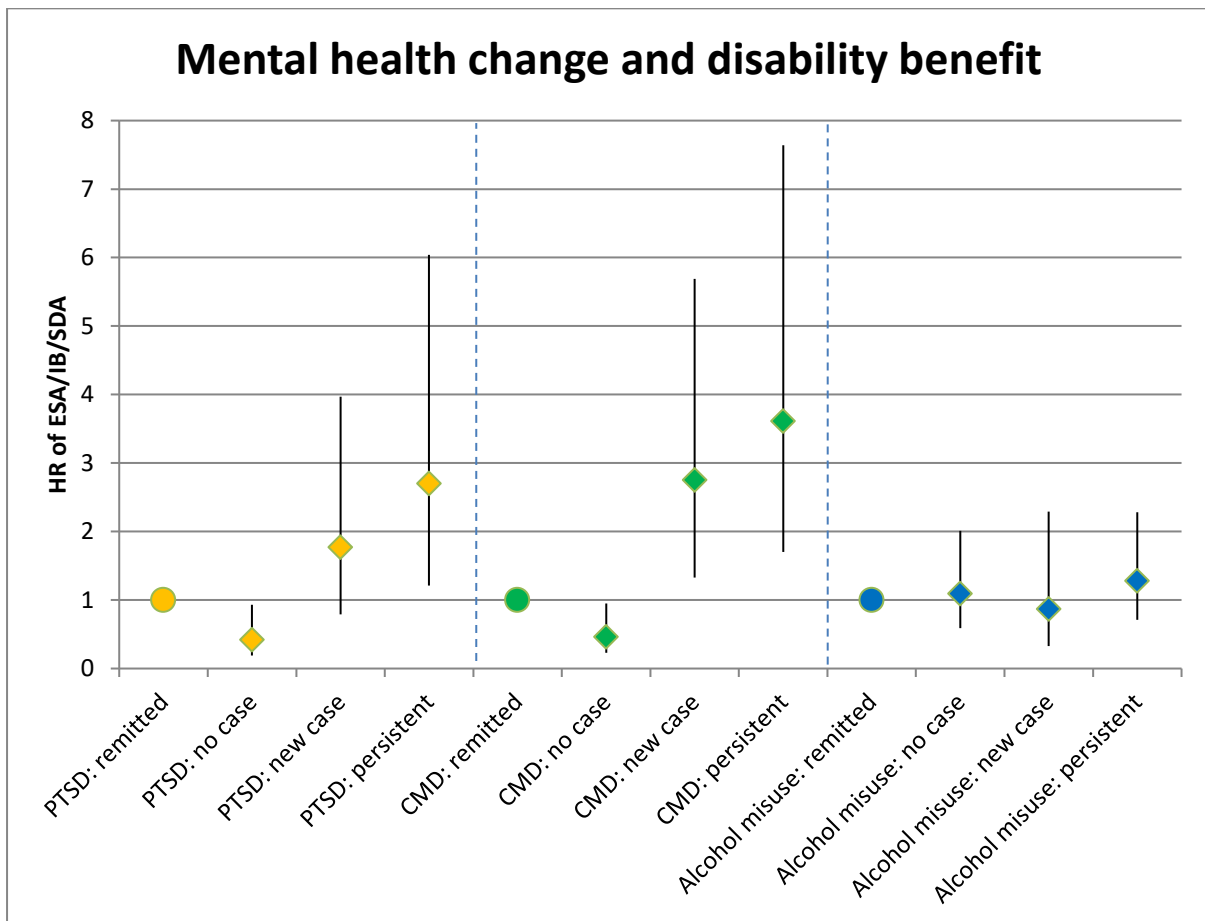*Figure 13 Mental health change over transition and use of disability benefit; where error bar is above 1 a group is at higher risk than the indicated reference group, and where lower than 1 that group is at lower risk*

# 5. Discussion

Veterans' receipt of welfare benefits is a frequent topic of discussion. To date such discussions have not been informed by good evidence. Some might assume that one of the many difficulties of transitioning to 'civvy street' is unemployment; while others might assume that a cadre of physically fit and skilled personnel should obtain high levels of employment post-service. We were able to examine rates of unemployment and disability benefit claims, and in each case, identify associations with the length of time a veteran had been receiving that benefit (i.e. distinguishing short-term, persistent, and recurring unemployment and disability benefit use) within the period of the cohort being studied.

This study found that a substantial proportion of veterans claimed unemployment benefit support shortly after leaving service (e.g. around 7% claiming at 1 month after leaving), but that receipt was short-term (e.g. dropping to under 2% within two years after leaving), and that long-term dependency on unemployment benefits was negligible. By contrast, disability benefits were less frequently claimed by veterans (at only around 1.5%), but when received were likely to be persistent over the longer term.

We were also able to identify the effects of childhood adversity (including both family adversity and anti-social behaviour), in-service factors (including rank, deployment history, deployment experiences, and being an Early Service leaver[xxviii]), and post-service factors (particularly mental health status and alcohol misuse) on receipt of benefits, and to examine the associations between benefit usage and prior and/or subsequent mental ill health to identify groups at risk of poor transition.

One key predictor of post-service benefit receipt was having a history of claiming benefits before joining. This may be indicative of the fact that socio-economic situation of an enlistee is not necessarily 'wiped clean' by joining the services. Another important pre-service predictor of unemployment benefits was having a history of childhood anti-social behaviour. Pre-enlistment anti-social behaviour may persist into adulthood and may be associated with personality characteristics which may be more tolerated in a military than a civilian environment, and may even be utilised to good effect. However, such behaviour or associated personality traits may impact negatively on functioning in civilian life and employment roles once someone has left. Higher education (i.e above GCSE level) reduces the risk of claiming unemployment benefits, but there was no significant difference between those with GCSEs and those with no qualifications at all; this might indicate that skills obtained in service are substituting for GCSE-level education.

Certain service-related factors also seemed to have an effect on post-service benefit receipt. Those from the Naval Services and RAF were less likely to claim benefits; this may be a consequence of these broadly being the more 'technical' services, with strong emphasis on skills which are likely to be transferrable to civilian life, and/or a consequence of a higher recruitment threshold in these services compared to the Army. Higher rank was also protective, possibly due to the socio-economic strata from which Commissioned Officers are often drawn, but also possibly due to the nature of the

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[xxviii] I.e. an ex-Service member who did not complete their initial period of service, usually of 4 years.

management and logistical skills obtained by higher ranks (and the fact that more physically demanding, and potentially physically and mentally more injurious, roles are generally held by lower ranks). By contrast, role and deployment to Iraq or Afghanistan impacted little on post-service outcomes. Those who serve for longer periods are less likely to claim benefits when they do leave; these individuals will also likely be older, and hence less likely to claim unemployment benefits in general (see Table 3 on page 15). One point of interest was that, while Early Service Leavers appeared to be more likely to claim unemployment benefits (as would be expected given past findings), this relationship disappeared once other factors (particularly method of leaving), were taken into account. This suggests that, while ESLs are an at-risk group of claiming unemployment benefit post-service, it is not necessarily the short duration of their service that is the problem; rather the surrounding context for their early leaving needs to be taken into account. Indeed, method of leaving was a key factor affecting risk of subsequent benefit usage (i.e. unplanned and unexpected end of service rather than brevity of service).

Mental health, physical health and alcohol misuse also affected benefit receipt in several ways. In- and post-service PTSD, CMD, and in-service physical ill health were associated with an increased risk of unemployment benefit, but the impact of these factors was low, suggesting that unemployment is linked mostly to factors other than poor mental and physical health. By contrast, post-service mental health was a strong predictor of post-service disability benefit, and a large proportion of those taking disability benefits had a substantial mental health symptom load (76.1% would be expected to qualify as a PTSD and/or CMD case). In-service measures of CMD and PTSD (but not alcohol misuse) also predicted post-service disability benefits, but these were not as strong as post-service mental health measures, indicating that present circumstances were more relevant to disability benefit.

Alcohol misuse did not have the same associations: unexpectedly, both in- and post-service alcohol misuse only had very mild impacts on post-service unemployment benefits, and had no relations with disability benefits. Furthermore, neither recovering from alcohol misuse post-service, nor becoming a new case of alcohol misuse post-service, affected benefit usage. This surprising finding requires further elucidation.

Thus many sociodemographic and service-related factors had a link with claiming benefits as a veteran. The most consistent predictors of both forms of post-service benefits use were:

- low rank;
- method of leaving (with unplanned leaving associated with higher unemployment benefit receipt, and those medically discharged having a higher risk of disability benefit receipt);
- having a pre-service history of benefits, and
- having a post-service mental health disorder.

These factors may help identify at-risk individuals and allow support to be prioritised, or at least tailored and targeted, accordingly. However, the impact of any potential support provision would need to be appropriately evaluated.

Approaches such as Individual Placement and Support (IPS) have proven effectiveness among those suffering from mental health disorders[7], and veteran re-employment charitable services have used similar approaches specifically in a veteran context [4]. Many veteran disability benefit seekers are

PTSD and/or CMD cases (see 4.1 on page 25 above); thus the Department for Work and Pensions might benefit from providing such services alongside the back-to-work services they already provide as part of the welfare system.

Certain limitations must be taken into account. The KCMHR cohort relies on self-report questionnaire data, with responses around 60% at each phase of data collection. There is always a concern that those who have not responded are more likely to be disadvantaged. The overall trends shown in Chapter 2 include the entire sample, irrespective whether the individual responded to questionnaire in the KCMHR cohort; analyses in the remainder of the document are adjusted to take account of non-response. Thus it is hoped that the results shown in this study are as representative as possible of the true context for veterans.

Overall, this study indicates that veterans were not generally at particular risk of claiming welfare benefits, but certain subgroups were (particularly those who claimed benefits pre-enlistment and unplanned leavers). Most veterans supporting themselves with disability benefits were also shown to have poor mental health; the evidence here suggests that if the latter were treated it would reduce disability benefit receipt, so such treatment would be worth further attention.

Potential avenues for future research include examining veteran income and the employment sector (to better determine the type and quality of post-service employment), and to determine the most effective pathways and interventions (such as IPS) to return veterans who are known to be suffering mental health issues during (and post) Service to work.

# 6. Recommendations

- Potential interventions to reduce the need for unemployment benefits should be focused on personnel within the first two years of leaving service, and particularly for the early period after leaving (e.g. the first 3 months)
  - Interventions should be either those for which an evidence base already exists (such as IPS) or should be evaluated to ensure their effectiveness
  - Support would be best targeted at those who leave with a private-equivalent rank, those who leave in an unplanned manner, those with a childhood history of anti-social behaviour, and those with a history of pre-enlistment unemployment benefit use, as these are the strongest predictors of post-service unemployment benefit
- Those with medical discharges and/or a history of pre-enlistment disability benefit receipt should be considered at higher risk of claiming disability benefit, and appropriate safeguards and support should be considered
- Those with a history of pre-service adversity and/or benefits should, if possible, be identified and provided additional support during the transition process
- Given the high prevalence of mental disorders among those claiming disability benefits, further qualitative study could be useful in understanding their support needs and experiences
- Similarly, research within clinical mental health services, particularly those aimed at veterans, could shed further light on social services support for those hardest-to-reach and most disadvantaged (who may be beyond the reach of this study)
- Further quantitative and/or study on those with very short periods of service is advisable, utilising newly-collected data as these made up only a small proportion of veterans in this sample
- The Ministry of Defence is already active in increasing mental healthcare support for serving and ex-Service personnel[8]. Targeting mental health resources at those who are receiving disability benefits by the relevant service providers may well be fruitful, as there is evidence that remission of mental health symptoms reduces disability benefit requirement

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# Appendix 1: Data sources

## Study population

This project involved the KCMHR Iraq/Afghanistan cohort database, following over 11,000 trained Armed Forces personnel who served during the periods of those conflicts to the present date, and who are now veterans. These ex-Service personnel were matched with welfare benefit records held by the DWP.

KCMHR cohort data was collected over three phases. The first phase comprised of a sample of 17,499 individuals who had deployed at the beginning of the Iraq war (Operation TELIC 1) and non-deployed controls, and was collected June 2004-March 2006. The second phase followed up 9,335 of those in the first phase who had agreed to be contacted again, as well as new samples comprising 1,789 of those who had served in Afghanistan and 6,628 new controls who had not deployed to either conflict. Data for the second phase was collected between November 2007 and September 2009. The third phase comprised those who took part in either of the previous phases (n=12,283), as well as a sample of new personnel (n=8581); data was collected between November 2014 and December 2016. For full details of the data collection see the key publications on the KCMHR cohort [9, 10]. The sample for this study included those who had responded at phase 1 and/or phase 2, as well as all those in the third phase irrespective of response.

Overall benefit claims reported in Chapter 2 includes all those in the sample, irrespective of whether they responded (as such analyses do not require the use of any further data). Those analyses which include socio-demographic or service factors require data from the KCMHR cohort database, and hence do not include non-responders at phase 3; to take account of this, analyses are corrected for non-response as described below ("Response and attrition").

There is a concern that those who do not respond may be more likely to be suffering deprivation. Non-responders were slightly more likely to use benefits[xxix]; this does not undermine the analyses in this study, as overall benefit included all personnel irrespective of non-response, and all other analyses were adjusted for non-response by response weighting (see "Response and attrition" below).

## Data matching

KCMHR data necessary for linkage was sent to the DWP containing 9,731 discharged Service personnel (and 2,298 reserve personnel who were still serving based on data available). Matching was based on National Insurance (NI) number, date of birth, name and gender; "good" matches were those matched on NI number, date of birth, and at least one other factor, with "poor" matches being either NI number only or all factors except NI number. Once the linkage was complete, DWP data was transferred to KCMHR to merge with the full cohort data.

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[xxix] 7.7% of non-responders were taking unemployment benefits at 1 month after leaving, compared with 5.5% who responded at all phases they were a part of and 6.5% who responded to some, but not all, eligible phases. For disability benefits, the proportions at 1 year were 2.7% for non-responders, 0.9% for complete responders, and 1.8% for partial responders.

## Generating variables in the KCMHR cohort

The KCMHR cohort contained self-report data on respondents' service in the Armed Forces, basic demographics, and a measure of pre-enlistment vulnerability. Questionnaires provided also contained mental health measures, and (for those who had left service at the time of filling the questionnaire) questions regarding post-service experience such as method of leaving and post-service employment status. Furthermore, service-related variables were also provided by Ministry of Defence data, from which the original sample was selected.

From these sources, socio-demographic and service-related variables were produced by using the latest-available data. This involved using Ministry of Defence data where available, and filling missing values by using phase 3 KCMHR cohort data by preference, then prior phases. Thus, where variables refer to matters which are liable to change with time (such as rank and education), the analyses in this study utilise the most recent value. Note that cohort members did not necessarily, and indeed rarely, filled all questionnaires at all three phases – some joined the cohort after the first phase, and others did not respond at later phases.

Rank was divided into private and private-equivalent "other ranks", Non-Commissioned officers (from Lance Corporal-equivalent to Warrant Officer Class 1 equivalent), and Commissioned Officers.

Data used for role in the service was taken from questionnaire responses to the query "What is your primarily role in your parent unit?". This question allowed 19 possible responses, which were reduced to three for the purposes of this thesis: Combat (e.g. front-line infantry and other direct combat roles), combat support (i.e. one step removed from the front-line by comparison with combat troops, but still potentially involved in battlefield situations) and combat services support (e.g. infrastructure, training, logistics, and other "back office" roles). The roles available in the questionnaires, and their categorisations, are shown Table 4.

Table 4 Categorisation of role responses

| Questionnaire response | Categorisation |
|---|---|
| Combat | Combat |
| EOD (bomb disposal) | Combat support |
| Air crew | |
| Communications | |
| Medical/welfare | Combat services support |
| Logistics | |
| Engineering | |
| Intelligence | |
| Military police | |
| Flight Operations | |
| Administrative | |
| Driver | |
| Training | |

To determine method of leaving, respondents were asked to endorse one of the following responses to the question "How did you leave?":

- "End of service term or run out date"

- "Premature Voluntary Release/signed off"

- "Medical discharge"

- "Administrative discharge"

- "Temperamental unsuitability/services no longer required"

- "Disciplinary discharge"

- "Voluntary redundancy"

- "Compulsory redundancy"

- "Other (please specify)".

A binary variable was then generated – "planned leaver" or "unplanned leaver" (Table 5) (note that "planned" is used rather than "voluntary" as it is not possible to distinguish those who left in a planned way but would have preferred to stay).

*Table 5 Possible military exits*

| Circumstances of exit | Planned/ unplanned | Voluntary/ involuntary | Initiative lies with… |
|---|---|---|---|
| Completes current service term; does not wish to apply for further service | Planned | Voluntary | Leaver |
| Completes current service term; not offered possibility of continuing service | Planned | Either (unknown) | Service |
| Applies to leave voluntarily before completing current term (includes Premature Voluntary Release/signed off, voluntary redundancy) | Planned | Voluntary | Leaver |
| Discharged involuntarily (dishonourable discharge, temperamental unsuitability/services no longer required, compulsory redundancy, medical discharge, administrative discharge etc.) | Unplanned | Involuntary | Service |

Relationship status was not included in this study due to its variation over time and impossibility of knowing what occurred in the intervening time (or, when relationship status did not change, whether it referred to the same significant other).

### Benefits data

DWP-provided data on benefits covered matched individuals for their lifetime to 31st October 2016, and was not limited by dates of joining or leaving the military. Data included the type of benefit being received and start/end dates. By comparing with dates of joining and leaving, pre- and post-service benefit receipt could be determined.

### Mental health and alcohol measures

Probable post-traumatic stress disorder (PTSD) was identified in the questionnaire using the 17-item National Centre for PTSD Checklist (civilian version) (PCL)[11, 12]. Rather than a cut-off of 50, as would be appropriate when estimating prevalence of PTSD, we used a cut-off of 30 so as to be more inclusive of potential PTSD sufferers.

Symptoms of common mental disorder (CMD) were measured with the 12-item General Health Questionnaire (GHQ)[13, 14]. This is a screening instrument designed to identify two classes of problems: inability to carry out normal "healthy" functions, and the appearance of new distressing phenomena[15]. It is intended to be used in clinical settings for identification of potential cases, prior to diagnosis by psychiatric interviews, but may also be used in surveys as in this case[16].

Respondents' degree of alcohol misuse was examined with the World Health Organization Alcohol Use Disorders Identification Test (AUDIT)[17], a 10-item measure scoring items 0-4. This measure screens for hazardous alcohol use, alcohol dependence and alcohol misuse (i.e. harm). While previous surveys within UK military populations have used a cut-off of 16 when identifying cases of alcohol misuse[18], in this study we have used a cut-off of 8 as is appropriate to a civilian population.

## Response and attrition

1,588 individuals (20%) did not respond to the questionnaire. Factors associated with non-response are shown in Table 6; based on these factors, response weights were calculated to take account of non-response. Note that this does not affect analyses which uses benefits data only, which was collected irrespective of response (and hence are unweighted, i.e. Chapter 2), but affects analyses involving covariates (including mental health, i.e. Chapters 3 and 4). The adjusted model involves adjusting for all factors simultaneously.

*Table 6 Associations between demographics and non-response*

| Category | Response | OR of non-response | AOR of non-response |
|---|---|---|---|
| *Sex* | Male | 1 | 1 |
| | Female | 0.62 (0.50-0.77)*** | 0.87 (0.66-1.13) |
| *Rank* | Other | 19.2 (16.3-22.5)*** | 15.9 (13.5-18.8)*** |
| | NCO | 1 | 1 |
| | CO | 0.35 (0.22-0.54)*** | 0.42 (0.27-0.65)*** |
| *Service arm* | Naval services | 0.73 (0.62-0.85)*** | 0.59 (0.49-0.72)*** |
| | Army | 1 | 1 |
| | RAF | 0.37 (0.31-0.45)*** | 0.42 (0.34-0.52)*** |
| *Method of leaving* | Planned | 1 | 1 |
| | Unplanned | 3.08 (2.66-3.56)*** | 1.73 (1.44-2.09)*** |
| | Medical | 3.30 (2.80-3.90)*** | 2.14 (1.73-2.64)*** |
| *Preservice unemployment* | None | 1 | 1 |
| | Some | 6.86 (5.94-7.92)*** | 2.75 (2.30-3.27)*** |
| *Preservice disability* | None | 1 | 1 |
| | Some | 5.35 (3.12-9.17)*** | 1.14 (0.59-2.22) |

## Appendix 2: Associations between socio-demographic and service-related factors and benefit usage

The analysis of risks of benefit receipt in Table 7 are based on Cox regression, which produces a measure of risk of the outcome taking into account period at risk (i.e. time after leaving). The failure event for this survival analysis was first taking benefits. Results are weighted to take account of non-response. The adjusted model includes adjustment for all covariates (as nearly every factor has some association with a form of benefit, and factors are not independent of one another).

*Table 7 Full details of associations between socio-demographic and service-related factors and benefit usage*

| Factor | | N = 7942 | Unemployment | | Disability | |
|---|---|---|---|---|---|---|
| Category | Response | Number in group (% weighted) | Hazard ratio (weighted) | Adjusted hazard ratio (weighted) | Hazard ratio (weighted) | Adjusted hazard ratio (weighted) |
| *Sex* | Male | 7,239 (91.2) | 1 | | 1 | 1 |
| | Female | 703 (8.8) | 0.68 (0.56-0.83)*** | 0.75 (0.60-0.93)* | 0.93 (0.64-1.34) | 0.93 (0.58-1.49) |
| *Rank* | Other | 2,635 (33.1) | 2.03 (1.84-2.25)*** | 1.42 (1.23-1.65)*** | 2.32 (1.88-2.86)*** | 1.59 (1.11-2.27)* |
| | NCO | 4,064 (51.4) | 1 | 1 | 1 | 1 |
| | CO | 1,243 (15.5) | 0.26 (0.20-0.33)*** | 0.31 (0.23-0.42)*** | 0.19 (0.10-0.35)*** | 0.35 (0.17-0.71)** |
| *Service arm* | Naval services | 1,342 (17.0) | 0.69 (0.59-0.79)*** | 0.82 (0.70-0.97)* | 0.51 (0.36-0.70)*** | 0.54 (0.36-0.81)** |
| | Army | 5,076 (64.1) | 1 | 1 | 1 | 1 |
| | RAF | 1,524 (19.0) | 0.54 (0.47-0.62)*** | 0.80 (0.68-0.95)* | 0.43 (0.31-0.60)*** | 0.77 (0.52-1.15) |
| *Method of leaving* | Planned | 6,124 (77.8) | 1 | 1 | 1 | 1 |
| | Unplanned | 1,025 (13.0) | 2.11 (1.84-2.41)*** | 1.29 (1.07-1.56)** | 2.19 (1.57-3.06)*** | 1.01 (0.63-1.63) |
| | Medical | 722 (9.2) | 1.40 (1.17-1.68)*** | 0.90 (0.70-1.16) | 7.11 (5.49-9.20)*** | 7.51 (5.31-10.6)*** |
| *Role* | Combat | 1,586 (25.0) | 1 | 1 | 1 | 1 |
| | CS | 786 (12.4) | 0.69 (0.56-0.86)** | 1.02 (0.82-1.28) | 0.72 (0.47-1.10) | 1.38 (0.90-2.14) |
| | CSS | 3,552 (55.9) | 0.69 (0.61-0.79)*** | 1.03 (0.88-1.19) | 0.60 (0.45-0.81)** | 1.13 (0.80-1.58) |
| | Not known | 430 (6.8) | 0.99 (0.79-1.24) | 1.11 (0.88-1.42) | 0.81 (0.46-1.42) | 0.86 (0.46-1.62) |
| *Deployment to Iraq/Afghan* | None | 1,346 (21.2) | 1 | 1 | 1 | 1 |
| | Deployed | 4,371 (68.9) | 0.99 (0.86-1.15) | 0.83 (0.70-0.98)* | 1.38 (0.98-1.95) | 1.31 (0.87-1.95) |
| | Not known | 637 (9.8) | 0.94 (0.75-1.17) | 0.80 (0.61-1.04) | 1.14 (0.71-1.85) | 0.99 (0.56-1.76) |

| Length of service | <4 years | 507 (6.4) | 1.62 (1.37-1.92)*** | 0.90 (0.63-1.29) | 1.65 (1.15-2.36)** | 0.97 (0.48-1.95) |
|---|---|---|---|---|---|---|
| | 4-11 | 3,568 (45.0) | 1 | 1 | 1 | 1 |
| | 11-23 | 2,522 (31.8) | 0.56 (0.50-0.63)*** | 0.78 (0.67-0.91)** | 0.59 (0.46-0.76)*** | 1.02 (0.71-1.49) |
| | >23 | 1,335 (16.9) | 0.27 (0.22-0.32)*** | 0.48 (0.38-0.59)*** | 0.15 (0.09-0.25)*** | 0.48 (0.27-0.86)* |
| Pre-enlistment vulnerability – family | No adversity | 2,029 (32.1) | 1 | 1 | 1 | 1 |
| | Adversity | 2,478 (39.3) | 1.26 (1.09-1.46)** | 1.01 (0.86-1.17) | 1.44 (1.02-2.01)* | 0.94 (0.65-1.35) |
| | Not known | 1,847 (28.6) | 1.20 (1.04-1.39)* | 1.14 (0.94-1.37) | 1.48 (1.05-2.09)* | 1.33 (0.88-2.01) |
| Pre-enlistment vulnerability – behaviour | No adversity | 2,382 (37.7) | 1 | 1 | 1 | 1 |
| | Adversity | 2,125 (33.7) | 1.79 (1.55-2.07)*** | 1.21 (1.04-1.42)* | 1.95 (1.39-2.73)*** | 1.16 (0.81-1.66) |
| | Not known | 1,847 (28.6) | 1.45 (1.25-1.68)*** | - | 1.75 (1.24-2.47)** | - |
| Education | None | 437 (6.9) | 1.04 (0.83-1.30) | 0.92 (0.72-1.16) | 1.89 (1.29-2.75)** | 1.36 (0.87-2.13) |
| | GCSE | 2,416 (38.1) | | 1 | 1 | 1 |
| | A-level | 2,130 (33.5) | 0.65 (0.57-0.74)*** | 0.82 (0.71-0.94)** | 0.60 (0.44-0.80)** | 0.78 (0.57-1.07) |
| | Graduate+ | 1,013 (15.8) | 0.26 (0.21-0.33)*** | 0.72 (0.54-0.96)* | 0.27 (0.15-0.49)*** | 0.66 (0.32-1.34) |
| | Not known | 38 (5.7) | 0.72 (0.54-0.97)* | 0.72 (0.53-0.99)* | 1.09 (0.59-2.00) | 0.94 (0.53-1.67) |
| Pre-service unemployment | None | 6,969 (87.8) | 1 | 1 | 1 | 1 |
| | Some | 973 (12.3) | 2.24 (1.98-2.54)*** | 1.62 (1.34-1.95)*** | 2.60 (2.00-3.37)*** | 1.40 (0.93-2.12) |
| Pre-service disability | None | 7,885 (99.3) | 1 | 1 | 1 | 1 |
| | Some | 57 (0.7) | 2.10 (1.37-3.24)** | 1.12 (0.62-2.01) | 3.93 (1.97-7.86)*** | 2.86 (1.09-7.47)* |

# Appendix 3 Service and socio-demographic factors and degree of unemployment benefit usage after leaving

## Associations between service and sociodemographic factors and amount of benefit usage after leaving

These analyses involve negative binomial regression rather than Cox regression; this form of regression is designed for count variables (i.e. ones where most responders will have low values, tailing off towards higher values), and takes into account the fact that many will report zero for number of days of benefit used in the period. As above, the adjusted model includes adjustment for all factors as all had an association in the univariate analysis.

*Table 8 Days of unemployment benefit in the first two years since leaving*

| Category | Response | First year | | Second year | |
|---|---|---|---|---|---|
| | | IRR (response weighted) (95% CI) | aIRR (response weighted) (95% CI) | IRR (response weighted) (95% CI) | aIRR (response weighted) (95% CI) |
| Sex | Male | 1 | 1 | 1 | 1 |
| | Female | 0.49 (0.36-0.67)*** | 0.66 (0.47-0.93)* | 0.46 (0.28-0.73)** | 1.09 (0.57-2.07) |
| Rank | Other | 2.25 (1.94-2.61)*** | 1.75 (1.39-2.21)*** | 3.72 (2.82-4.91)*** | 1.04 (0.67-1.62) |
| | NCO | 1 | 1 | 1 | 1 |
| | CO | 0.34 (0.24-0.50)*** | 0.33 (0.20-0.53)*** | 0.26 (0.12-0.56)** | 0.29 (0.13-0.65)** |
| Service arm | Naval services | 0.61 (0.49-0.75)*** | 0.93 (0.69-1.25) | 0.46 (0.30-0.70)*** | 0.58 (0.34-1.00)* |
| | Army | 1 | 1 | 1 | 1 |
| | RAF | 0.49 (0.39-0.61)*** | 0.82 (0.62-1.09) | 0.24 (0.15-0.37)*** | 0.50 (0.29-0.86)* |
| Method of leaving | Planned | 1 | 1 | 1 | 1 |
| | Unplanned | 2.53 (2.11-3.04)*** | 1.53 (1.22-1.93)*** | 3.75 (2.72-5.17)*** | 1.84 (1.15-2.94)* |
| | Medical | 1.42 (1.06-1.89)* | 0.90 (0.64-1.26) | 1.32 (0.81-2.13) | 0.65 (0.35-1.19) |
| Role | Combat | 1 | 1 | 1 | 1 |
| | CS | 0.63 (0.45-0.88)** | 0.88 (0.64-1.22) | 0.74 (0.41-1.35) | 0.91 (0.52-1.59) |
| | CSS | 0.63 (0.50-0.79)*** | 0.99 (0.77-1.27) | 0.44 (0.29-0.66)*** | 1.50 (0.93-2.43) |
| | Not known | 0.88 (0.60-1.29) | 0.97 (0.69-1.36) | 1.23 (0.60-2.51) | 1.79 (0.96-3.32) |
| Deployment to Iraq/Afghan | None | 1 | 1 | 1 | 1 |
| | Deployed | 0.82 (0.65-1.05) | 0.81 (0.64-1.22) | 0.76 (0.48-1.21) | 0.60 (0.37-0.98)* |
| | Not known | 0.61 (0.42-0.88)** | 0.77 (0.50-1.18) | 0.59 (0.31-1.14) | 0.79 (0.35-1.77) |
| Length of service | <4 years | 1.57 (1.24-1.97)*** | 0.53 (0.32-0.90)* | 2.60 (1.80-3.78)*** | 0.97 (0.47-2.01) |
| | 4-11 | 1 | 1 | 1 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| | 11-23 | 0.54 (0.45-0.65)*** | 0.97 (0.76-1.24) | 0.31 (0.22-0.43)*** | 0.32 (0.19-0.52)*** |
| | >23 | 0.37 (0.28-0.49)*** | 0.92 (0.64-1.31) | 0.09 (0.04-0.18)*** | 0.08 (0.04-0.17)*** |
| *Pre-enlistment vulnerability – family* | No adversity | 1 | 1 | 1 | 1 |
| | Adversity | 1.44 (1.14-1.82)** | 0.97 (0.76-1.23) | 1.41 (0.89-2.23) | 1.15 (0.72-1.83) |
| | Not known | 1.02 (0.80-1.30) | 1.06 (0.80-1.40) | 1.07 (0.69-1.67) | 2.29 (1.33-3.96)** |
| *Pre-enlistment vulnerability – behaviour* | No adversity | 1 | 1 | 1 | 1 |
| | Adversity | 1.71 (1.36-2.17)*** | 1.28 (1.01-1.62) | 4.90 (3.16-7.58)*** | 3.36 (1.99-5.67)*** |
| | Not known | 1.11 (0.87-1.41) | - | 2.59 (1.66-4.04)*** | - |
| *Education* | None | 1.52 (1.06-2.18)* | 1.09 (0.82-1.45) | 1.95 (1.08-3.55)* | 0.87 (0.48-1.56) |
| | GCSE | 1 | 1 | 1 | 1 |
| | A-level | 0.66 (0.53-0.81)*** | 0.82 (0.66-1.01) | 0.57 (0.39-0.84)** | 0.78 (0.51-1.17) |
| | Graduate+ | 0.39 (0.26-0.59)*** | 0.96 (0.61-1.51) | 0.18 (0.07-0.45)*** | 0.21 (0.10-0.46)*** |
| | Not known | 1.05 (0.70-1.59) | 1.07 (0.71-1.61) | 0.79 (0.36-1.74) | 1.43 (0.59-3.46) |
| *Preservice unemployment* | None | 1 | 1 | 1 | 1 |
| | Some | 2.51 (2.11-2.99)*** | 2.05 (1.61-2.62)*** | 3.16 (2.34-4.27)*** | 1.57 (0.87-2.83) |
| *Preservice disability* | None | 1 | 1 | 1 | 1 |
| | Some | 2.15 (1.19-3.87)* | 0.98 (0.40-2.39) | 3.26 (1.36-7.84)** | 2.78 (0.57-13.5) |

# Appendix 4 Health and benefit usage

The analyses in Table 9 include Cox regressions for risk of receiving benefits within the mental health categories (failure event being first taking benefits), as well as Population Attributable Fraction (PAF). PAF is the proportional reduction in the outcome in the population that would occur if exposure to a risk factor were reduced to an alternative ideal exposure scenario (e.g. no PTSD cases). PAFs for individual risk factors often overlap (e.g. between PTSD and CMD) and add up to more than 100 percent. The adjusted model involves adjusting for those socio-demographic and service-related factors found to be predictive of both benefit outcomes and mental health caseness (i.e. rank, Service, role, length of service, family-related pre-enlistment-vulnerability, and education).

*Table 9 Mental and physical health associations with benefit usage (Cox regression)*

| Unemployment | | | | | | |
|---|---|---|---|---|---|---|
| Category | Response | Number (%) | Hazard ratio | PAF | Adjusted hazard ratio | PAF |
| In-service PTSD | No case | 4,511 (81.0) | 1 | | 1 | |
| | Case | 1,061 (19.0) | 1.67 (1.44-1.92)*** | 0.12 (0.08-0.16) | 1.27 (1.10-1.49)** | 0.07 (0.02-0.11) |
| In-service CMD | No case | 4,366 (78.3) | 1 | | 1 | |
| | Case | 1,207 (21.7) | 1.43 (1.24-1.65)*** | 0.09 (0.05-0.13) | 1.21 (1.04-1.40)* | 0.05 (0.01-0.09) |
| In-service alcohol misuse | No case | 2,119 (38.1) | 1 | | 1 | |
| | Case | 3,446 (61.9) | 1.55 (1.35-1.77)*** | 0.26 (0.12-0.32) | 1.18 (1.02-1.36)* | 0.11 (0.01-0.20) |
| In-service physical symptoms | No case | 4,916 (89.3) | 1 | | 1 | |
| | Case | 589 (10.7) | 1.45 (1.21-1.73)** | 0.05 (0.02-0.07) | 1.39 (1.16-1.67)*** | 0.04 (0.02-0.07) |
| Post-service PTSD | No case | 2,445 (75.6) | 1 | | 1 | |
| | Case | 788 (24.4) | 2.14 (1.81-2.54)*** | 0.24 (0.18-0.30) | 1.56 (1.31-1.86)*** | 0.16 (0.10-0.23) |
| Post-service CMD | No case | 2,550 (78.8) | 1 | | 1 | |
| | Case | 688 (21.3) | 1.82 (1.52-2.18)*** | 0.16 (0.11-0.21) | 1.47 (1.24-1.76)*** | 0.12 (0.06-0.17) |
| Post-service alcohol misuse | No case | 1,657 (51.3) | 1 | | 1 | |
| | Case | 1,574 (48.7) | 1.49 (1.26-1.76)*** | 0.20 (0.12-0.28) | 1.20 (1.01-1.41)* | 0.10 (0.01-0.19) |
| Disability | | | | | | |
| Category | Response | | Hazard ratio | PAF | Adjusted hazard ratio | PAF |
| In-service PTSD | No case | 4,511 (81.0) | 1 | | 1 | |
| | Case | 1,061 (19.0) | 3.35 (2.52-4.56)*** | 0.33 (0.24-0.42) | 2.48 (1.87-3.30)*** | 0.29 (0.18-0.38) |
| In-service CMD | No case | 4,366 (78.3) | 1 | | 1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Case | 1,207 (21.7) | 2.57 (1.92-3.43)*** | 0.27 (0.17-0.36) | 2.14 (1.61-2.85)*** | 0.24 (0.13-0.33) |
| *In-service alcohol misuse* | No case | 2,119 (38.1) | 1 | | 1 | |
| | Case | 3,446 (61.9) | 1.14 (0.84-1.54) | - | 0.79 (0.57-1.09) | - |
| *In-service physical symptoms* | No case | 4,916 (89.3) | 1 | | 1 | |
| | Case | 589 (10.7) | 2.60 (1.85-3.63)*** | 0.15 (0.08-0.21) | 2.36 (1.70-3.27)*** | 0.14 (0.07-0.20) |
| *Post-service PTSD* | No case | 2,445 (75.6) | 1 | | 1 | |
| | Case | 788 (24.4) | 5.58 (3.78-8.24)*** | 0.56 (0.42-0.66) | 3.98 (2.55-6.22)*** | 0.52 (0.36-0.63) |
| *Post-service CMD* | No case | 2,550 (78.8) | 1 | | 1 | |
| | Case | 688 (21.3) | 6.51 (4.42-9.57)*** | 0.56 (0.43-0.66) | 5.16 (3.44-7.74)*** | 0.54 (0.40-0.65) |
| *Post-service alcohol misuse* | No case | 1,657 (51.3) | 1 | | 1 | |
| | Case | 1,574 (48.7) | 1.36 (0.93-1.97) | - | 1.01 (0.68-1.49) | - |

## Mental health over transition

Table 10 shows the full data from the analysis of effects in change in mental health status between service and veteran timepoints. The reference group in each case is the remitted group (i.e. those who qualified as a case while in service but not when followed up after leaving). The adjusted model is as above.

*Table 10 Change in mental health and benefit outcomes*

| In-service mental health | Change | Number using unemployment/ total (%) | OR of unemployment (95% CI) | Adjusted OR of unemployment (95% CI) | Number using disability/total (%) | OR of disability (95% CI) | Adjusted OR of disability (95% CI) |
|---|---|---|---|---|---|---|---|
| PTSD | Remitted | 47/178 (26.4) | 1 | 1 | 8/178 (4.5) | 1 | 1 |
| | No case | 266/1792 (14.8) | 0.48 (0.34-0.70)*** | 0.72 (0.48-1.09) | 31/1761 (1.7) | 0.24 (0.0-0.62)** | 0.42 (0.19-0.93)* |
| | New case | 82/311 (26.4) | 1.03 (0.65-1.62) | 1.09 (0.68-1.75) | 27/311 (8.7) | 1.36 (0.51-3.60) | 1.77 (0.79-3.97) |
| | Persistent | 90/260 (34.6) | 1.67 (1.05-2.66)* | 1.60 (0.99-2.60) | 41/260 (15.8) | 2.62 (1.01-6.76)* | 2.70 (1.21-6.04)* |
| CMD | Remitted | 70/319 (21.9) | 1 | 1 | 12/319 (3.8) | 1 | 1 |
| | No case | 276/1718 (16.1) | 0.66 (0.48-0.91)* | 0.77 (0.55-1.08) | 29/1718 (1.7) | 0.35 (0.15-0.81)* | 0.46 (0.23-0.95)* |
| | New case | 64/286 (22.4) | 1.17 (0.76-1.79) | 1.04 (0.68-1.60) | 31/286 (10.8) | 2.53 (1.08-5.91)* | 2.75 (1.33-5.69)** |
| | Persistent | 75/223 (33.6) | 1.80 (1.18-2.75)** | 1.61 (1.05-2.47)* | 35/223 (15.7) | 3.91 (1.66-9.18)** | 3.61 (1.70-7.64)** |
| Alcohol misuse | Remitted | 105/494 (21.3) | 1 | 1 | 22/494 (4.5) | 1 | 1 |
| | No case | 130/871 (14.9) | 0.58 (0.42-0.79)** | 0.93 (0.67-1.28) | 30/871 (3.4) | 0.54 (0.28-1.06) | 1.09 (0.59-2.01) |
| | New case | 33/223 (14.8) | 0.55 (0.35-0.88)* | 0.86 (0.54-1.39) | 6/223 (2.7) | 0.42 (0.15-1.13) | 0.87 (0.33-2.29) |
| | Persistent | 217/952 (22.8) | 1.03 (0.77-1.39) | 1.09 (0.81-1.48) | 49/952 (5.2) | 1.07 (0.56-2.01) | 1.28 (0.71-2.28) |