

Health Reports

Understanding future needs of Canadian veterans

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Understanding future needs of Canadian veterans

by Linda D. VanTil, MaryBeth MacLean, Jill Sweet and Kristofer McKinnon

Abstract

Background: Planning for the future needs of Canadian veterans requires comprehensive and detailed data on the size of the Canadian veteran population and their health. This article describes current veteran population estimates and examines the health of two eras of veterans compared with the health of Canadians in general.

Data and methods: This study describes the size and age structure of the Canadian veteran population forecasted by Veterans Affairs Canada (VAC). Veteran health was examined for two eras of Regular Force veterans. The health of earlier-era veterans (released between 1954 and 2003) was examined using the 2003 Canadian Community Health Survey. The health of recent-era veterans (released between 1998 and 2012) was examined using the 2013 Life After Service Survey. Health indicators for veterans were compared with the Canadian general population using age- and sex-adjusted rates and confidence intervals.

Results: The VAC forecast points to a stable population of about 600,000 veterans for the next decade, but a growing proportion will be older than 70 years old. Regular Force veterans of both eras had a higher prevalence than the Canadian general population of activity limitations and back problems, a lower prevalence of low income, and a similar prevalence of life stress and heavy drinking. Recent-era veterans had a higher prevalence than the Canadian general population of many more indicators—in particular, arthritis, self-rated mental health, depression and anxiety.

Interpretation: Veterans differed from the Canadian general population in many areas of well-being, and recent-era veterans differed in more areas than earlier-era veterans. These results highlight the need for forecasting and planning, and for policy that is sensitive to these differences and incorporates health status changes as veterans age. Multiple data sources will be required to describe the future health needs of the entire Canadian veteran population.

Keywords: Veterans, population health, epidemiology, survey

An estimated 658,000 veterans were living in Canada as of March 2017.¹ Veterans are former members of the Canadian Armed Forces (Regular Force or Reserve Force).² Unfortunately, there is no detailed listing of the 650,000 Canadians who served in the First World War, the 1,037,000 who served in the Second World War, the 26,800 who served in the Korean War, or the many who served in the Canadian Armed Forces since 1954.³ Veterans Affairs Canada (VAC) uses several sources to estimate the size and age structure of the veteran population in Canada. These sources are used to forecast future veteran population estimates, but do not describe veterans' health.

Administrative data at VAC include some health information; however, less than 20% of veterans receive VAC benefits. Descriptions of veterans' health rely on survey data, in particular the Canadian Community Health Survey (CCHS) and the Life After Service Survey (LASS). To inform planning for the future needs of Canada's veteran population, this article fills an important information gap by providing a comprehensive portrait of the forecasted size and age structure of the veteran population, and then examining the health of two eras of veterans compared with their Canadian general population counterparts.

Data and methods

Veteran population forecast

VAC completed separate veteran population forecasts for war service veterans and for veterans with service since 1954. War service veterans are veterans who served prior to 1954 in the First World War (1914 to 1918), the Second World War (1939 to 1945) or the Korean War (1950 to 1953). Male war service veterans were identified most recently in the 1971 Census of Canada, while female war service veterans were identified for the first time in the 1988 Labour Force Survey. Veterans with service since 1954 were identified for the first time in the 2003 CCHS. Since 2003, these sources have been supplemented with actual and forecasted releases from administrative data supplied by the Department of National Defence (DND). Age- and sex-specific Canadian life expectancies were applied to the original sources to produce annual updates and forecasts of the size and age structure of the population.⁴

2003 Canadian Community Health Survey

The 2003 CCHS covered the population 12 years of age and older living in Canadian communities.⁵ This cross-sectional survey used telephone interviews for 70% of respondents and personal interviews for 30% of respondents. The survey response rate was 81%. Aboriginal status (i.e., First Nations, Métis or Inuit) was self-identified by 1.5% of veterans with service between 1914 and 2003. This small number precluded

the use of Aboriginal status in additional analysis.

All CCHS respondents aged 18 and older were asked a series of veteran identification questions, with a 97% response rate. This self-identification did not provide other details to describe their military service. Respondents aged 65 and older were asked, “Have you ever had any wartime service (WWI, WWII, Korea) in the military forces of Canada or its allies?” (n=2,742, representative of 360,000 war service veterans with service prior to 1954). Respondents aged 18 and older were asked, “Not counting current service, have you ever had any peacetime service in the military forces of Canada? Was this service in the regular forces? Primary reserves?”

The small number of respondents younger than 20 years old and older than 84 years old, and those who served in the Reserve Force only were excluded from the health indicator analysis. This resulted in a sample size of 1,785—representative (after weighting) of the 302,000 veterans released from the Regular Force between 1954 and 2003 (earlier-era veterans).

2013 Life After Service Survey

The 2013 LASS examined veterans’ health and well-being. It was a cross-sectional computer-assisted telephone interview survey⁶ conducted by Statistics Canada in March 2013. The survey had a 70% response rate, and 90% of respondents agreed to share their data with VAC and DND. Veterans were identified from a computer-generated listing of Canadian military releases since 1998. They provided additional details to describe their military service, including year of release, rank at release and class of reserve service. For this paper, the analysis excluded those who served in the Reserve Force only, and participants younger than 20 years old or older than 84 years old. This resulted in a sample size of 2,329—representative (after weighting) of the 56,000 Regular Force veterans released between 1998 and 2012 (recent-era veterans).

Analysis

Prevalence estimates incorporated survey sampling weights that accounted for both non-response and the complex stratified sampling design of the CCHS and LASS. Confidence intervals were calculated at the 95% level using a bootstrap resampling method for the CCHS and Stata SVY commands for the LASS share file.

Comparisons with the Canadian general population were conducted using observed veteran distributions and age- and sex-adjusted Canadian comparator data. Canadian comparators for earlier-era veterans used the 2003 CCHS, and Canadian comparators for recent-era veterans used the 2012 CCHS. The adjustment did not allow direct comparison between earlier-era and recent-era veterans because of different observed age distributions. Non-overlapping confidence intervals were considered statistically significant. This was recognized as a conservative assessment since it is possible to have overlapping confidence intervals and a statistically significant t-test. However, this was rarely noted for the earlier-era comparisons.⁷

The health indicators were selected from a standard set of population health indicators that allowed for comparisons with the Canadian general population⁸ and included those available in both the 2003 CCHS⁵ and the 2013 LASS.⁹ Included in this study were 20 health indicators, including seven chronic conditions. Additional details on the indicator definitions are documented elsewhere.⁷

Results

Veteran population forecast

The 2017 VAC forecast estimated that the Canadian veteran population was 658,000—representing about 4% of the Canadian adult male population (less than 1% of the Canadian adult female population). VAC forecasts of war service veterans with service prior to 1954 declined from 1.2 million in 1951 to 312,000 in 2003. This forecasted number

was lower than the 360,000 estimated by the 2003 CCHS. By 2017, there were a forecasted 58,000 war service veterans, with an average age of 91. By 2026, there will be few remaining war service veterans in Canada (see Figure 1).

Forecasts for veterans with service since 1954 rely on 2003 CCHS data, which estimated that there were 302,000 Regular Force veterans and 269,000 Reserve Force veterans. Therefore, the 2003 estimate was 571,000 veterans with service since 1954. VAC forecasts of these veterans predict that their numbers will remain at about 600,000 from 2017 to 2026 and will consist of about half Regular Force veterans and half Reserve Force veterans (see Figure 1).

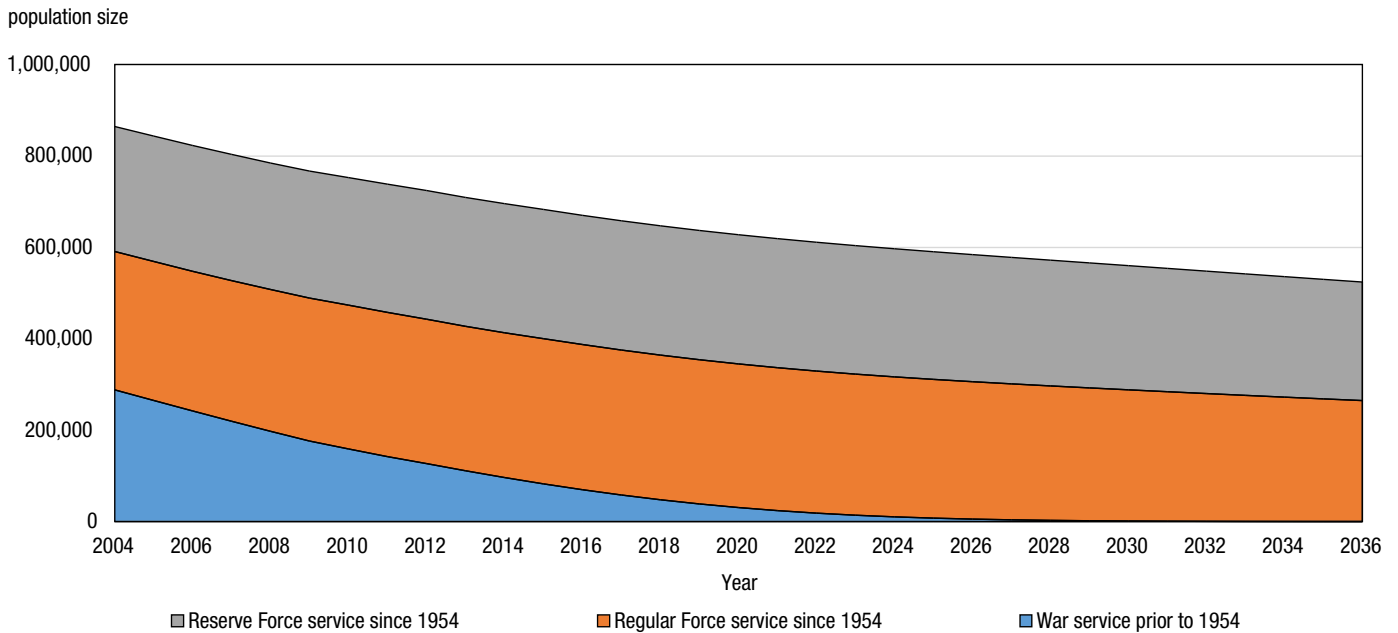
The age profile of veterans released since 1954 demonstrated that few were older than age 70 in 2003. The forecasted age distribution of these veterans includes new releases each year, yet the group older than 70 is expected to increase—reaching 33% by 2026 (see Figure 2).

Health indicators for veterans released since 1954

Health indicators are described for two eras of Regular Force veterans: the 302,000 who were released between 1954 and 2003, and the 56,000 who were released between 1998 and 2012. The majority of veterans were male and married. Earlier-era Regular Force veterans were older on average than recent-era veterans—53 years old compared with 44 years old (see Table 1). This age difference precluded direct comparisons of observed prevalence between veterans of the two eras in the following tables; instead, comparable groups of the Canadian general population were provided.

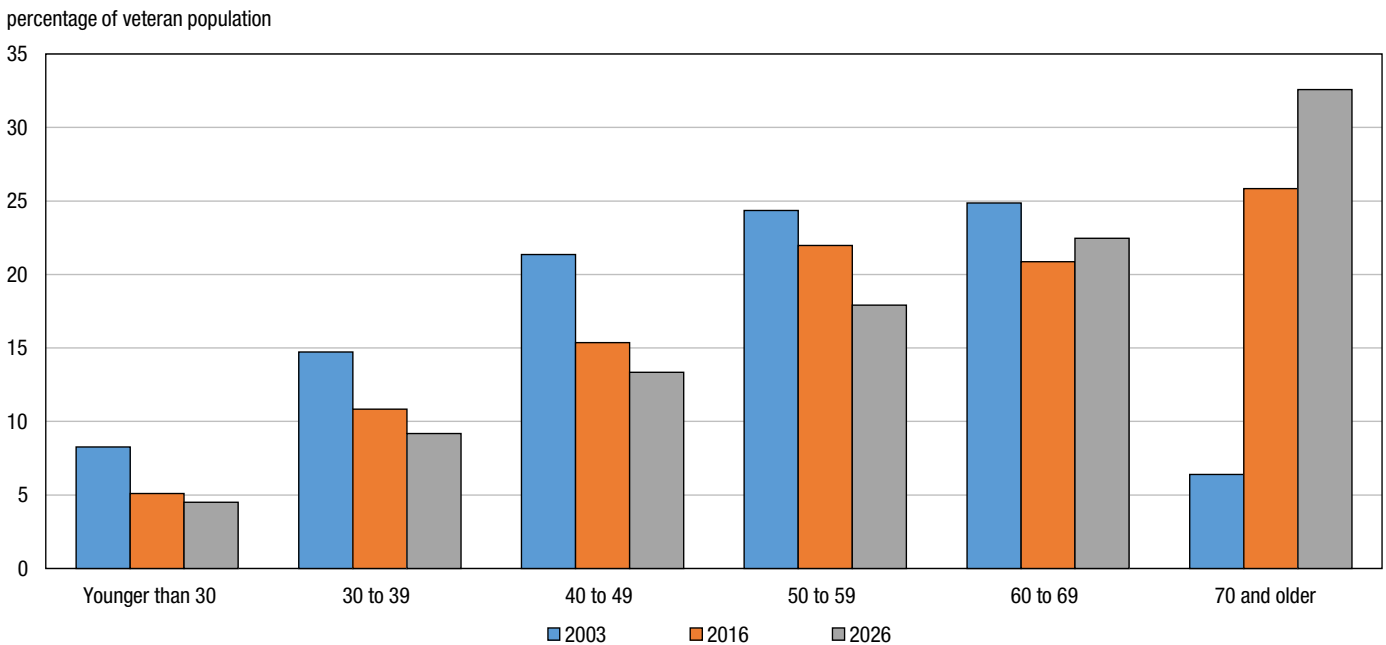
Regular Force veterans of both eras had a higher prevalence than comparable Canadians of activity limitation, a lower prevalence of low income, and a similar prevalence of life stress and heavy drinking (see Table 2). Self-rated mental health of earlier-era veterans was

Figure 1
Estimated veteran population, by type of service, 2004 to 2036



Source: Veterans Affairs Canada, Statistics Directorate.

Figure 2
Estimated age distribution of the veteran population



Source: Veterans Affairs Canada, Statistics Directorate; veterans with service since 1954.

Table 1
Demographic characteristics of Regular Force veterans, by era

| | Earlier era [†] | Recent era [‡] |
|-----------------|--------------------------|-------------------------|
| Year of release | 1954 to 2003 | 1998 to 2012 |
| Population size | 302,000 | 56,000 |
| Mean age | 53 | 44 |
| Female (%) | 11 | 13 |
| Married (%) | 76 | 74 |

[†]From the 2003 Canadian Community Health Survey (CCHS)

[‡]From the 2013 Life After Service Survey (LASS)

Sources: Statistics Canada, 2003 CCHS and 2013 LASS.

better than that of the Canadian general population. However, self-rated mental health for recent-era veterans was worse than for their Canadian comparators. Recent-era veterans had a higher prevalence of additional indicators, including self-rated health, obesity, needing help with activities of daily living, employment, postsecondary education, life satisfaction and sense of community belonging. Earlier-era veterans were the same as the Canadian general population in these areas. Recent-era veterans were less likely to be daily smokers than comparable Canadians.

Back problems and arthritis were the most common chronic conditions observed among veterans of

both eras (see Table 3). Regular Force veterans of both eras had a higher prevalence of back problems than comparable Canadians. Recent-era veterans also had a higher prevalence of arthritis, depression, anxiety and high blood pressure, while earlier-era veterans had similar rates to comparable Canadians for these conditions. Prevalence of cancer and heart disease was similar for veterans of both eras and comparable Canadians.

Discussion

There are currently an estimated 658,000 Canadian veterans, representing about 4% of the Canadian adult male population (less than 1% of the Canadian adult female population). By 2026, it is estimated that there will be about 600,000 veterans with service since 1954, and a third of these veterans will be older than age 70.

Regular Force veterans with service since 1954 were found to have a higher prevalence than comparable Canadians of back problems and activity limitations, a lower prevalence of low income, and a similar prevalence of life stress and heavy drinking. Recent-era veterans (released

between 1998 and 2012) had a higher prevalence than comparable Canadians of arthritis and mental health—in particular depression and anxiety—and a variety of other indicators. This deterioration is consistent with a preliminary description of recently released veterans with service in Afghanistan,¹⁰ and with an examination of mental health data.¹¹

The VAC population forecast model may underestimate the number of veterans in Canada when it compares the VAC war service counts with 2003 CCHS estimates.⁷ The underestimation may be explained by the VAC model's use of Canadian mortality rates that are higher than veteran mortality rates.¹² The description of veterans' health and well-being in terms of two eras was not clearly delineated since the two eras had an overlap of five years (1998 to 2003) that could not be removed from the 2003 CCHS because year of release was not captured. However, this was expected to have a minimal effect on the 50-year release period examined by the 2003 CCHS. The description of veteran health did not include Reserve Force veterans. However, the majority of

Table 2
Observed prevalence for health indicators in Regular Force veterans, by era

| | Veterans released between 1954 and 2003 [†] | | | Canadian comparator, 2003 [†] | | | Veterans released between 1998 and 2012 [‡] | | | Canadian comparator, 2012 [§] | | |
|---|--|------|------|--|------|------|--|------|------|--|------|------|
| | 95% confidence interval | | | 95% confidence interval | | | 95% confidence interval | | | 95% confidence interval | | |
| | percent | from | to | percent | from | to | percent | from | to | percent | from | to |
| Activity limitation (sometimes, often) | 42.3* | 39.0 | 45.7 | 34.1 | 33.4 | 34.7 | 49.5* | 47.2 | 51.8 | 24.6 | 23.9 | 25.3 |
| Low income (below low-income measure by household size) | 4.7* | 3.7 | 6.0 | 7.4 | 7.0 | 7.7 | 7.6* | 6.3 | 9.1 | 15.1 | 14.6 | 15.6 |
| Life stress (quite a bit, extremely stressful) | 24.5 | 21.4 | 27.8 | 22.9 | 22.4 | 23.5 | 22.5 | 20.3 | 24.5 | 25.8 | 25.3 | 26.3 |
| Heavy drinking (5 or more drinks per occasion, 12 or more times per year) | 22.0 | 19.3 | 25.0 | 20.2 | 19.6 | 20.7 | 24.7 | 22.7 | 26.8 | 27.0 | 26.5 | 27.5 |
| Self-rated mental health (very good, excellent) | 78.8* | 75.8 | 81.5 | 72.4 | 71.8 | 73.1 | 61.6* | 59.3 | 63.9 | 72.8 | 72.3 | 73.3 |
| Self-rated health (very good, excellent) | 56.7 | 53.0 | 60.2 | 55.2 | 54.5 | 55.8 | 52.6* | 50.2 | 54.9 | 61.5 | 60.9 | 62.9 |
| Obesity | 19.7 | 16.8 | 23.1 | 16.6 | 16.1 | 17.0 | 26.1* | 24.1 | 28.2 | 20.2 | 19.7 | 20.7 |
| Needs help with activities of daily living | 13.9 | 11.9 | 16.0 | 11.9 | 11.5 | 12.3 | 20.1* | 18.4 | 22.0 | 6.0 | 5.5 | 6.5 |
| Employment rate | 67.6 | 64.8 | 70.2 | 68.9 | 65.2 | 72.3 | 71.8* | 69.7 | 73.8 | 76.4 | 74.4 | 78.4 |
| Postsecondary education | 55.7 | 51.9 | 59.3 | 53.6 | 52.9 | 54.3 | 52.3* | 50.0 | 54.7 | 67.1 | 66.5 | 67.7 |
| Life satisfaction (satisfied, very satisfied) | 90.8 | 88.7 | 92.6 | 91.2 | 90.8 | 91.6 | 85.8* | 84.0 | 87.4 | 92.1 | 91.8 | 92.4 |
| Sense of community belonging (somewhat strong, very strong) | 61.2 | 57.6 | 64.7 | 64.4 | 63.8 | 65.1 | 57.5* | 55.2 | 59.8 | 62.1 | 61.5 | 62.7 |
| Daily smoking | 22.2 | 19.5 | 25.1 | 19.4 | 18.9 | 19.9 | 16.5* | 14.7 | 18.4 | 20.4 | 20.0 | 20.8 |

* significantly different from reference category (p < 0.05)

[†]From the 2003 Canadian Community Health Survey (CCHS)

[‡]From the 2013 Life After Service Survey (LASS)

[§]From the 2012 CCHS

Sources: Statistics Canada, 2003 CCHS, 2013 LASS and 2012 CCHS.

Table 3
Observed prevalence for chronic conditions in Regular Force veterans, by era

| | Veterans released between 1954 and 2003 ^f | | | Canadian comparator, 2003 ^f | | | Veterans released between 1998 and 2012 ^g | | | Canadian comparator, 2012 ^g | | |
|---------------------|--|------|------|--|------|------|--|------|------|--|------|------|
| | 95% confidence interval | | | 95% confidence interval | | | 95% confidence interval | | | 95% confidence interval | | |
| | percent | from | to | percent | from | to | percent | from | to | percent | from | to |
| Back problems | 26.3* | 22.9 | 30.1 | 21.5 | 20.9 | 22.0 | 34.5* | 32.4 | 36.7 | 18.8 | 18.3 | 19.3 |
| Arthritis | 21.5 | 19.0 | 24.2 | 18.7 | 18.1 | 19.2 | 22.4* | 20.7 | 24.3 | 10.8 | 10.4 | 11.2 |
| Depression | 5.8 | 4.5 | 7.5 | 4.4 | 4.1 | 4.7 | 17.1* | 15.4 | 19.0 | 6.3 | 6.0 | 6.6 |
| Anxiety | F | 2.1 | 4.2 | 3.0 | 2.8 | 3.2 | 11.1* | 9.7 | 12.7 | 5.6 | 5.3 | 5.9 |
| High blood pressure | 18.3 | 16.2 | 20.6 | 19.2 | 18.7 | 19.7 | 17.2* | 15.8 | 19.0 | 14.7 | 14.3 | 15.1 |
| Heart disease | 8.5 | 7.1 | 10.2 | 7.5 | 7.1 | 7.9 | 3.3 | 2.7 | 4.1 | 3.5 | 3.2 | 3.8 |
| Cancer | F | 1.9 | 3.9 | 2.3 | 2.1 | 2.5 | F | 1.2 | 2.2 | 1.3 | 1.1 | 1.5 |

F too unreliable to be published

* significantly different from reference category ($p < 0.05$)

^fFrom the 2003 Canadian Community Health Survey (CCHS)

^gFrom the 2013 Life After Service Survey (LASS)

^hFrom the 2012 CCHS

Sources: Statistics Canada, 2003 CCHS, 2013 LASS and 2012 CCHS.

Reserve Force veterans were similar to comparable Canadians.¹³

The LASS has provided detailed descriptions of Canadian veterans released since 1998, but this study demonstrates that the LASS should not be used to describe the entire Canadian veteran population. VAC is working toward a more complete picture of Canadian veterans by seeking other potential data sources, including future cycles of the CCHS, the Canadian Longitudinal Study on Aging for older veterans,¹⁴ and mortality data linkage.¹⁵ Data linkages are limited by the lack of a listing of all Canadian veterans. Data are currently restricted to Regular Force veterans released since 1998, and Reserve Force veterans released since 2003. Both Statistics Canada¹⁶ and VAC have identified the need to develop a registry for all Canadian veterans to leverage existing data that do not currently identify veterans. The most comprehensive

vehicle to identify Canadian veterans is the short-form census. Statistics Canada is currently considering this with other 2021 Census content, but decisions will not be made until 2020.

As multiple sources are found to describe Canadian veterans, they provide opportunities to combine various pieces of information. VAC is currently working with Statistics Canada to generate a microsimulation model of the veteran population using the CCHS, the LASS and mortality data. This will be based on the population health model (POHEM) platform.¹⁷ Future uses of the microsimulation model, POHEM-V, will include projections of future Canadian veteran numbers. Since the model will incorporate evidence that veterans live longer than comparable Canadians,¹⁵ VAC forecasting will improve its current problem with underestimation. Since it will incorporate the evidence that the veteran population is aging and has

multiple health problems, POHEM-V will also have the capacity to generate veterans' future health profiles and needs for services. Future analysis of the longitudinal component of the 2016 LASS may adjust the current assumption that health trajectories for veterans are similar to comparable Canadians. Future iterations of POHEM-V may also incorporate other surveys that identify veterans using recommended screening questions.²

This paper provides evidence that veterans will be living longer but with generally greater activity limitations and mental health problems than their Canadian general population peers. This will likely translate into deteriorating health and the subsequent greater need for and use of both VAC benefits and provincial health care systems. ■

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