



RESEARCH

Canadian Fire Department Profile, 2014-2016

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Abstract

NFPA estimates there were approximately 152,650 firefighters in Canada during the period 2014 to 2016. An estimated 26,000 (17%) of these were career firefighters and 126,650 (83%) were volunteer firefighters. Most of the career firefighters worked in communities that protected 50,000 or more people. Most of the volunteer firefighters were in departments that protected fewer than 50,000 people. There is an estimated 3,672 fire departments in Canada. Of these, 66 departments were staffed by all career firefighters, 44 were mostly career, 501 were mostly volunteer and 3,061 were all volunteer. In Canada, 1,626 (44%) of departments provided no EMS service, 1,860 departments (51%) provided EMS service, and 186 (5 %) of departments provided EMS and advanced life support.

Keywords: Canada, fire departments, firefighters, career, volunteer, EMS, fire stations, pumpers, aerial fire apparatus, communities, US/national, emergency response topic, research topic, life support, fire protection systems topic, NFPA 18, industrial fire brigades.

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Canadian Fire Department Profile, 2014–2016

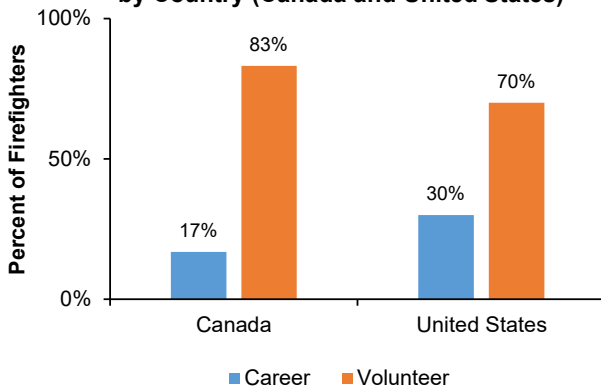
There were **152,650** local firefighters in Canada from 2014–2016.

- ▶ **17%** (26,000) were career firefighters.
- ▶ **83%** (126,650) were volunteer firefighters.
- ▶ Firefighters in smaller (less than 50,000 population) communities are more likely to be volunteers.

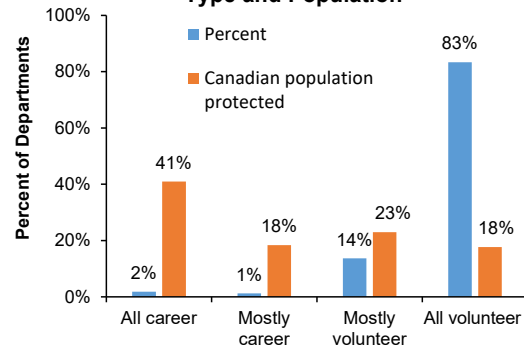
3,672 fire departments protected Canada from 2014–2016.

- ▶ All career 66
- ▶ Mostly career 44
- ▶ Mostly volunteer 501
- ▶ All volunteer 3,061

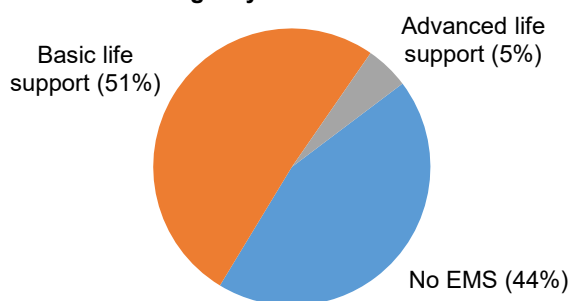
Percent of Career and Volunteer Firefighters by Country (Canada and United States)



Canadian Fire Departments by Type and Population



Canadian Fire Departments Providing Emergency Medical Service



Canadian fire departments generally protect larger land areas with less stations and apparatus than their United States equivalent.

Source: NFPA Research: www.nfpa.org/research
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Overview

Firefighters

- There were 152,650 career and volunteer firefighters in Canada during the period 2014 to 2016.
- 26,000 career firefighters in this period (2014 to 2016) represent an increase of 1.8% from the previous period (2013-2015).
- 126,650 volunteer firefighters in this period (2014-2016) is a decrease of 12.2% from the previous period.
- Most of the career firefighters in Canada are in departments that protect communities with 50,000 or more population.
- Most of the volunteer firefighters in Canada are in departments that protect communities with fewer than 50,000 population.
- Canadian median rates for career firefighters per 1,000 people are lower than their United States counterparts by community size, except in the larger metropolitan fire departments where the median rates are comparable.
- Canadian median rates for volunteer firefighters per 1,000 people are similar to their United States counterparts by community size.

Fire Departments

- There are an estimated 3,672 fire departments in Canada.
- 1.8% of Canadian all career departments protect 40.9% of the population, whereas 83.4% of departments are all volunteer and protect 17.7% of the population.
- Department types vary considerably by size of community protected.
- Compared to United States fire departments, Canadian departments had a higher percentage of all or mostly volunteers for all community sizes except in the case of larger metropolitan fire departments protecting populations greater than 500,000 where the United States reported some volunteer firefighters and Canada none.

Fire Department Apparatus and Stations

- The rates are higher for departments protecting small communities (under 2,500) because it takes a minimum number of apparatus and stations to operate a fire department, regardless of the number of people protected.
- Rates for aerial apparatus and stations are comparable to rates in the United States.

Fire Department Emergency Medical Services

- Nationwide 1,626 (44.3%) of departments provided no EMS service, 1,860 departments (50.7%) provided EMS service, and 186 (5.1%) of departments provided EMS and advanced life support.

Background and Objectives

This report provides an overview of local and municipal fire departments in Canada and comparisons to the United States. The analysis includes firefighters, fire departments, apparatus and stations. The results are based on data collected through the NFPA Canadian Fire Service Survey where the data was collected over the period 2014-2016.

This year's report includes among its results:

- An estimate of the total number of firefighters (including career, volunteer).
- Trends in the number of career and volunteer firefighters and rates.
- Median rates of firefighters per 1,000 population by population protected.
- Number of fire departments (including career and volunteer).
- Average apparatus and station rates.
- Departments providing emergency medical services by community size.

Methods

The report is based on the annual NFPA Canadian Fire Service Survey, 2014-2016. The Survey is a three year cycle survey which attempts to survey about one-third of the provinces in the country each year. The survey includes questions on the number of career firefighters, the number of volunteer firefighters, number of apparatus and stations and other fire service activities like emergency medical services provided. NFPA estimates that there are 3,672 fire departments in Canada. Of those 3,672 fire departments, 2,239 departments have responded to the survey since 2001, resulting in the survey representing 61 percent of Canadian fire departments and 90 percent of the Canadian population (Table 1). Fire departments that have not responded in the last three years, but have responded in the prior to 2014 are included in the analysis.

Table 1
Responding Fire Departments by Community Size

| Population Protected | Known Fire Departments | Population in Millions Protected | Responding Fire Departments | Response Rate¹ |
|-----------------------------|-------------------------------|---|------------------------------------|----------------------------------|
| 500,000 or more | 10 | 10.0 | 10 | 100% |
| 250,000 to 499,999 | 12 | 4.5 | 12 | 100% |
| 100,000 to 249,999 | 39 | 5.0 | 39 | 100% |
| 50,000 to 99,999 | 43 | 2.5 | 38 | 88% |
| 25,000 to 49,999 | 75 | 2.5 | 68 | 91% |
| 10,000 to 24,999 | 233 | 3.7 | 225 | 97% |
| 5,000 to 9,999 | 270 | 2.0 | 260 | 96% |
| 2,500 to 4,999 | 356 | 1.3 | 337 | 95% |
| Under 2,500 | 2,634 | 4.8 | 1,250 | 47% |
| Total | 3,672 | 36.3² | 2,239 | 61% |

¹ This response rate is a reflection of all the responses to the survey that have been received since the inception of the Canadian survey in 2001.

² Population of Canada as of July 1, 2016: 36,286,425

Results

The Canadian population (36,286,425) as of July 1, 2016 is used in development of these estimates. The residual known fire department where no information (survey) is available is assumed to be small rural fire departments that protect populations less than 2,500. This assumption is applied to weighting factors for the development of the ratio estimates methodology³ used in this report. This population of known fire departments that have not completed the NFPA Canadian Fire Service Survey account for 10 percent of the Canadian population or 3.3 million people. The survey has had an average response rate of 24-30% depending on which group of province is surveyed (Table 2).

The results in this report are based on local and municipal fire departments. Provincial and national firefighting entities were not included in this sample. No adjustments were made for private fire brigades, such as industrial or military installations.

Table 2
Number of Fire Departments Responding by Province

| Survey Group | Province | Number of Fire Departments Responding | Average Response Rate Per Survey Cycle ⁴ |
|-----------------|-----------------------|---------------------------------------|---|
| 1 | New Brunswick | 83 | 30% |
| | Ontario | 438 | |
| 2 | Alberta | 227 | 24% |
| | Quebec | 598 | |
| 3 | British Columbia | 202 | 25% |
| | Manitoba | 129 | |
| | Newfoundland | 139 | |
| | Nova Scotia | 188 | |
| | Northwest Territories | 23 | |
| | Prince Edward Island | 22 | |
| | Saskatchewan | 179 | |
| Yukon Territory | 10 | | |
| Total | | 2,239 | |

³ William G. Cochran, *Sampling Techniques*, John Wiley, New York, NY, 1977, pp. 150-161.

⁴ Group 1 survey cycle: 2002, 2005, 2008, 2011, 2014
 Group 2 survey cycle: 2003, 2006, 2009, 2012, 2015
 Group 3 survey cycle: 2001, 2004, 2007, 2010, 2013, 2016

Firefighters

There were approximately 152,650 firefighters, according to estimates based on NFPA's Canadian Fire Service Survey 2014-2016. This is a decrease of 10.1 percent from the previous period 2013-2015 (Table 3).

Table 3
Number of Firefighters in Canada, 2013-2016

| Period ⁵ | Aggregate | | Career | | Volunteer | |
|---------------------|-----------|---------------------------|--------|---------------------------|-----------|---------------------------|
| | Number | Rate per 1,000 Population | Number | Rate per 1,000 Population | Number | Rate per 1,000 Population |
| 2013-15 | 169,800 | 4.74 | 25,550 | 0.70 | 144,250 | 4.02 |
| 2014-16 | 152,650 | 4.21 | 26,000 | 0.72 | 126,650 | 3.49 |

Career firefighters include full-time uniformed firefighters regardless of assignments, e.g., suppression, prevention/inspection, administrative. For the purpose of this survey, career firefighters include only firefighters in public fire departments that protect people, their residences, and public buildings; they do not include firefighters working in private fire brigades, or for provincial and federal agencies.

Volunteer firefighters include any active part-time (call or volunteer) firefighters. Active volunteers are defined as being involved in firefighting. Of the total number of firefighters, 26,000 (17%) were career firefighters, while 126,650 (83%) were volunteers (Figure 1).⁶

Most career firefighters are in communities that protect 50,000 or more people. Most volunteer firefighters are in departments that protect fewer than 50,000 people (Table 4).

⁵ The NFPA Fire Service Survey of Canada is a three-year cycle survey which attempts to survey about one third of fire departments in Canada each year. For the period 2014-2016 the survey response rate has been about 17-22% from departments. NFPA has been collecting data on fire departments for 16 years. No adjustments were made for private fire brigades, such as industrial or military installations.

⁶ Note these results are based on a sample survey, and as a result there is a 95% confidence interval associated with each estimate. Based on the data reported by fire departments responding to the 2014, 2015 and 2016 NFPA Fire Service Survey of Canada, the NFPA is confident that the actual total number of firefighters falls between 151,350 and 153,950; the number of actual career firefighters between 25,650 and 26,350 and the actual number of volunteer firefighters fall between 125,700 and 127,600.

A good way to develop a sense of the size of departments relative to the population they protect is to examine the rate of the firefighters in the departments protecting at least 50,000 population and for the volunteer fighters in department protecting less than 50,000 population. **Note that rates are based on data reported to the NFPA and do not reflect recommended rates or some defined fire protection standard.**

Fire departments protecting 50,000 or more had median rates of career firefighters per 1,000 population of 0.90 to 1.15 ([Table 5](#)). Note that rates for a particular size of community varied considerably because departments face great variation in their specific circumstances and policies, including length of work week, unusual hazards, geographical dispersion of community, and scope of services provided (e.g., whether the department handles emergency medical calls). The Canadian median rates for career firefighter per 1,000 population were generally lower than their United States counterparts by community size.

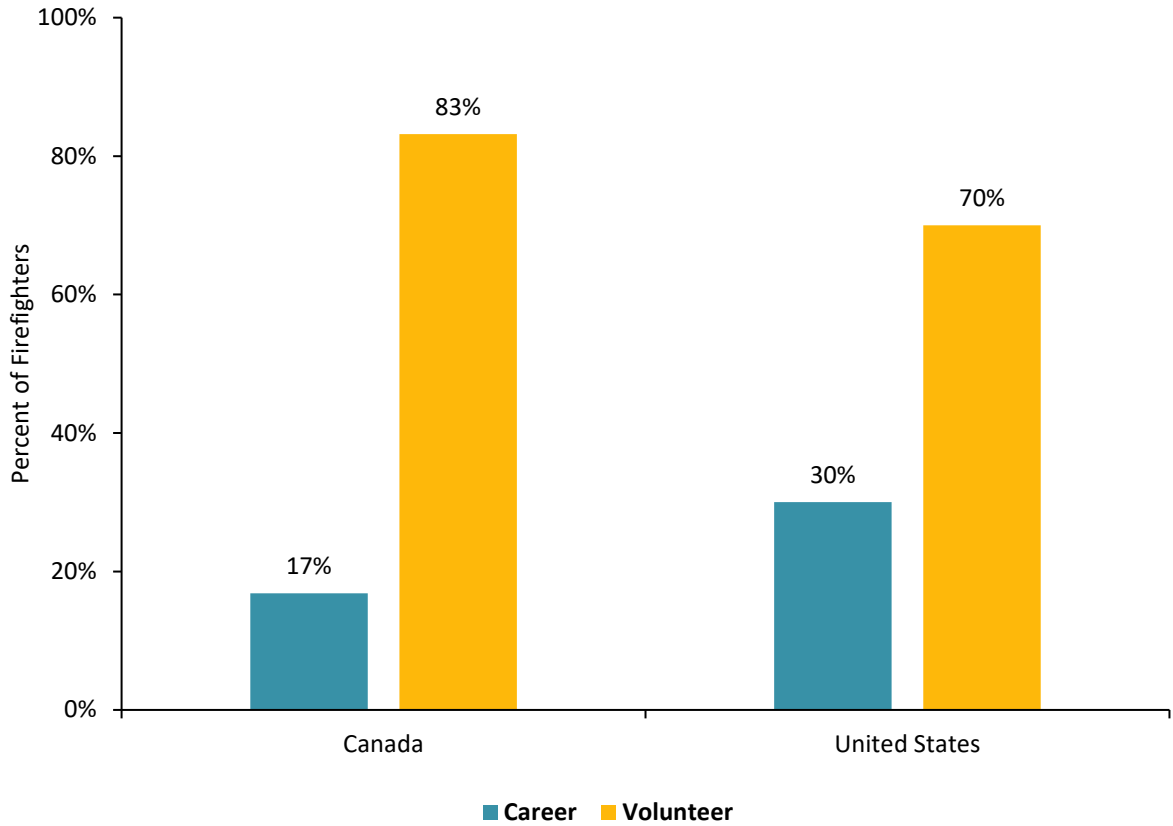


Figure 1. Percent of Career and Volunteer Firefighters by Country (United States and Canada)

Sources: NFPA Fire Service Survey of Canada (2014 to 2016).

Haynes, H.J.G. and Stein G.P. 2017. U.S. Fire Department Profile - 2015. National Fire Protection Association, Quincy, Massachusetts, United States of America. p.5.

Table 4
Percent of Career and Volunteer Firefighters by
Community Size in the United States and Canada

| Community Size | Canada | | United States | |
|--------------------|--------|-----------|---------------|-----------|
| | Career | Volunteer | Career | Volunteer |
| 500,000 or more | 95% | 5% | 92% | 8% |
| 250,000 to 499,999 | 72% | 28% | 93% | 7% |
| 100,000 to 249,999 | 68% | 32% | 96% | 4% |
| 50,000 to 99,999 | 60% | 40% | 86% | 14% |
| 25,000 to 49,999 | 24% | 76% | 72% | 28% |
| 10,000 to 24,999 | 10% | 90% | 43% | 57% |
| 5,000 to 9,999 | 4% | 96% | 18% | 82% |
| 2,500 to 4,999 | 2% | 98% | 6% | 94% |
| Under 2,500 | 0% | 100% | 3% | 97% |

Sources: 2014-2016 NFPA Fire Service Survey of Canada and 2015 NFPA Survey of Fire Departments for U.S. for U.S. Fire Experience.

Table 5
Career Firefighter Rates by Population Protected, 2014-2016

| Population Protected | Career Firefighters Per 1,000 Population | | |
|-----------------------------|---|---------------|-------------|
| | Low | Median | High |
| 500,000 or more | 0.64 | 1.15 | 1.35 |
| 250,000 to 499,999 | 0.13 | 0.90 | 1.16 |
| 100,000 to 249,999 | 0.28 | 0.95 | 1.63 |
| 50,000 to 99,999 | 0.04 | 1.15 | 8.00 |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Table 6
Volunteer Firefighter Rates by Population Protected, 2014-2016

| Population Protected | Volunteer Firefighters Per 1,000 Population | | |
|-----------------------------|--|---------------|-------------|
| | Low | Median | High |
| 25,000 to 49,999 | 0.00 | 1.43 | 5.85 |
| 10,000 to 24,999 | 0.00 | 2.62 | 19.23 |
| 5,000 to 9,999 | 0.00 | 4.22 | 28.57 |
| 2,500 to 4,999 | 1.00 | 6.67 | 29.14 |
| Under 2,500 | 0.00 | 18.18 | * |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Fire departments protecting fewer than 50,000 people had median rates of volunteer firefighters per 1,000 population in the range of 1.43 to 18.18 (Table 6). This wide range in median rates for smaller communities reflects the fact that it takes a minimum number of firefighters to staff a department regardless of the community size. Also volunteer firefighters are usually available on a part-time basis only, so it takes more of them to ensure an adequate response to each incident. Note that the Canadian median rates for volunteer firefighters per 1,000 population were similar to their United States counterparts by community size, with the exception being in communities where the population protected 10,000 to 24,999 Canada's median rate of 2.62 is more than twice the United States rate of 1.25.⁷

Table 4 shows the percent of career and volunteer firefighters by community size in the Canada and the United States. Career firefighters accounted for a higher percentage of firefighters in the United States (3 to 96%) for all community sizes of up to 499,999 population than in Canada (0 to 72%). On the other hand, volunteer firefighters accounted for a higher percentage of firefighters in Canada (28% to 100%) for the same community sizes of less than 2,500 to 499,999 population than in the United States (7% to 97%). (Also see Figure 2 and Figure 3.)

⁷ Hylton J.G. Haynes and Gary P. Stein, 2017. U.S. Fire Department Profile – 2015, National Fire Protection Association, Quincy, Massachusetts, United States of America. p. 12.

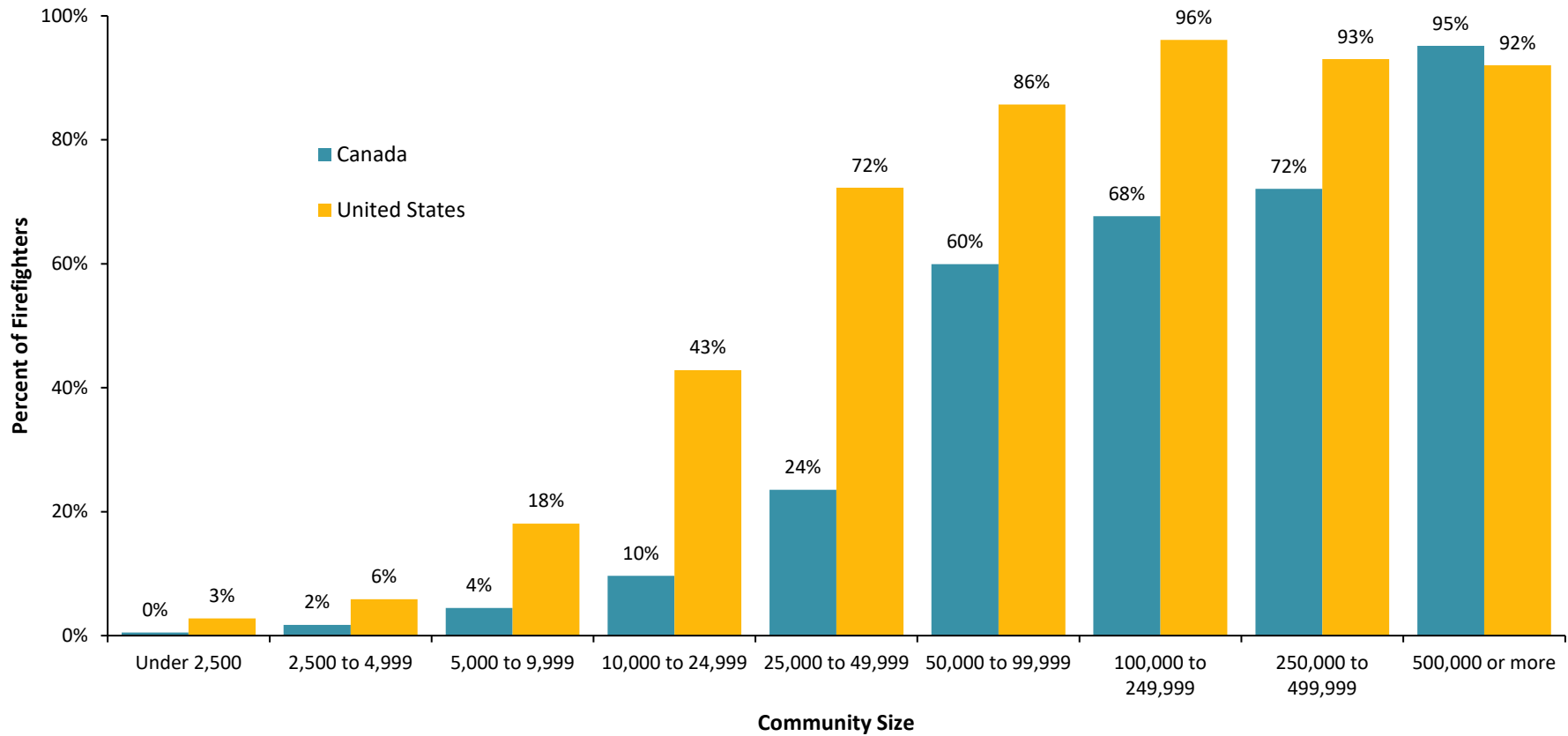


Figure 2. Percent of Career Firefighter by Community Size in Canada and the United States

Sources: NFPA Fire Service Survey of Canada (2014 to 2016).

Haynes, H.J.G. and Stein G.P. 2017. U.S. Fire Department Profile - 2015. National Fire Protection Association, Quincy, Massachusetts, United States of America. p.5.

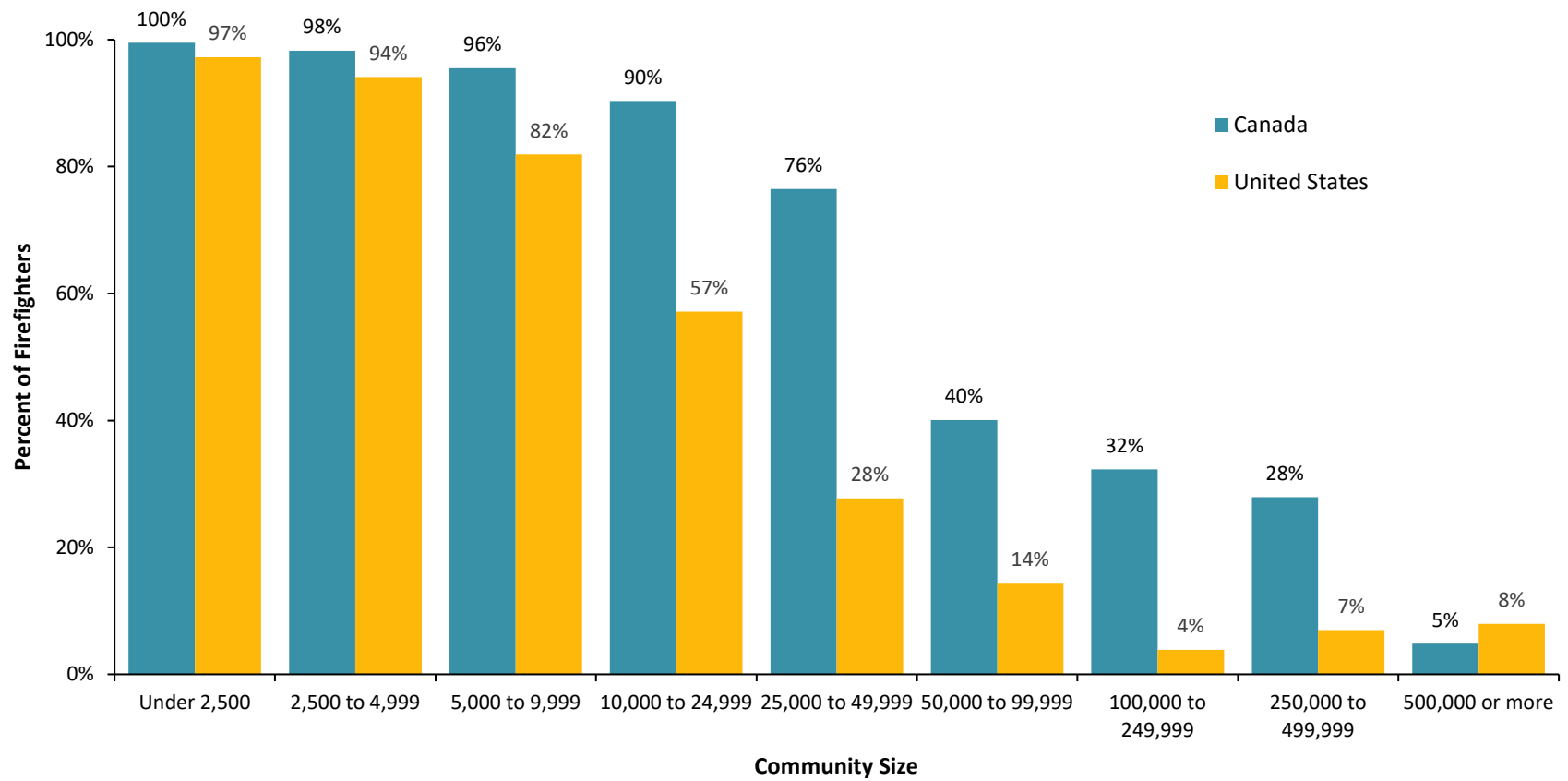


Figure 3. Percent of Volunteer Firefighters by Community Size in Canada and the United States

Sources: NFPA Fire Service Survey of Canada (2014 to 2016).

Haynes, H.J.G. and Stein G.P. 2017. U.S. Fire Department Profile - 2015. National Fire Protection Association, Quincy, Massachusetts, United States of America. p.5.

Fire Departments

NFPA estimates that there are 3,672 fire departments in Canada. The percent of departments by type⁸ of department during 2014-2016 in Canada is displayed in [Table 7](#) and [Table 8](#). All career fire departments represent 1.8% of departments and protect 40.9% of the population. Conversely all volunteer fire departments represent 83.4% of departments and protect 17.7% of the population (Table 7). Department type varied considerably by population protected. For community sizes above 50,000, the percentage of departments classified as all career **or** mostly career ranged from 65.8 to 100%, while for community sizes less than 50,000, the percentage of departments classified as all volunteer or mostly volunteer ranged from 82.4 to 99.9% (Table 8). Compared to the United States, Canadian departments had a higher percentage of all or mostly volunteers for most community sizes.

⁸ Department type is broken into four categories. All career departments are comprised 100% of career firefighters. Mostly career is comprised of 51 to 99% career firefighters, while mostly volunteer is comprised of 1 to 50% career firefighters. All volunteer departments are comprised 100% of volunteer firefighters.

Table 7
Number of Departments and Percent of Canadian
Population Protected by Type of Department

| Type of Department | Number | Percent | Percent of Canadian Population Protected |
|---------------------------|---------------|----------------|---|
| All Career | 66 | 1.8% | 40.9% |
| Mostly Career | 44 | 1.2% | 18.4% |
| Mostly Volunteer | 501 | 13.6% | 23.0% |
| All Volunteer | 3,061 | 83.4% | 17.7% |
| Total | 3,672 | 100.0% | 100.0% |

Source: NFPA Canadian Fire Service Survey 2014-2016.

Department type is broken into four categories. All career departments are comprised 100% of career firefighters. Mostly career is comprised of 51% to 99% career firefighters, while mostly volunteer is comprised of 1-50% career firefighter. All volunteer departments are comprised 100% of volunteer firefighters.

Table 8
Department Type by Population Protected, 2014-2016

| Population Protected | All Career | Mostly Career | Mostly Volunteer | All Volunteer | Total |
|-----------------------------|-------------------|----------------------|-------------------------|----------------------|--------------|
| 500,000 or more* | 80.0% | 20.0% | 0.0% | 0.0% | 100.00% |
| 250,000 to 499,999* | 25.0% | 58.3% | 16.7% | 0.0% | 100.00% |
| 100,000 to 249,999 | 48.7% | 30.8% | 20.5% | 0.0% | 100.00% |
| 50,000 to 99,999 | 44.7% | 21.1% | 34.2% | 0.0% | 100.00% |
| 25,000 to 49,999 | 11.8% | 5.9% | 75.0% | 7.4% | 100.00% |
| 10,000 to 24,999 | 2.7% | 4.0% | 78.7% | 14.7% | 100.00% |
| 5,000 to 9,999 | 1.5% | 0.4% | 47.7% | 50.4% | 100.00% |
| 2,500 to 4,999 | 0.0% | 0.3% | 23.1% | 76.6% | 100.00% |
| Under 2,500 | 0.1% | 0.0% | 4.1% | 95.8% | 100.00% |

Source: 2014-2012 NFPA Fire Service Survey of Canada.

*Because of the small number of departments reporting in this stratum, sample variability may be high.

Fire Department Apparatus and Stations

[Table 9](#) displays average apparatus and station rates per 1,000 people by community size during 2014-2016 in Canada. The rates are higher for departments protecting smaller communities (under 25,000). This is because it takes a minimum number of apparatus and stations to operate a fire department regardless of the number of people protected. For instance, for a department protecting 1,000 people, you would expect according to [Table 9](#) on average, 1.025 pumpers/combos, 1.074 other suppression apparatus, 0.026 aerial apparatus, and 1.101 stations. Another way to put this is that for every 100 departments protecting 1,000 people, you would expect 103 pumpers/combos, 107 other suppression apparatus, 3 aerial apparatus, and 110 stations. For communities of 50,000 to 499,999, the rates tend to be quite similar: .042-.072 pumpers per 1,000 people; and .043-.068 stations per 1,000 people. For aerial apparatus and station rates, these results are roughly comparable to the United States rates for communities of similar size.

[Table 10](#), [Table 11](#), [Table 12](#) and [Table 13](#) display the frequency of occurrence of pumpers, other suppression vehicles, aerial apparatus, and stations by size of community.

Table 9
Average Apparatus and Station Rates per
1,000 Population by Community Size, 2014-2016

| Community Size | Pumpers⁹ per 1,000 Population | Suppression¹⁰ Vehicles per 1,000 Population | Aerial Apparatus per 1,000 Population | Stations per 1,000 Population |
|-----------------------|---|---|--|--------------------------------------|
| 500,000 or more | 0.034 | 0.011 | 0.011 | 0.034 |
| 250,000 to 499,999 | 0.042 | 0.018 | 0.008 | 0.043 |
| 100,000 to 249,999 | 0.045 | 0.025 | 0.013 | 0.050 |
| 50,000 to 99,999 | 0.072 | 0.053 | 0.016 | 0.068 |
| 25,000 to 49,999 | 0.110 | 0.086 | 0.027 | 0.091 |
| 10,000 to 24,999 | 0.206 | 0.144 | 0.033 | 0.151 |
| 5,000 to 9,999 | 0.306 | 0.232 | 0.038 | 0.234 |
| 2,500 to 4,999 | 0.438 | 0.399 | 0.016 | 0.350 |
| Under 2,500 | 1.025 | 1.074 | 0.026 | 1.101 |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

⁹ Pumper reported above had a capability of 640 gpm or greater.

¹⁰ Other suppression vehicles including apparatus with pumps less than 640 gpm, hose wagons, brush fire, vehicles, tankers etc.

Table 10
Pumpers (640 gpm or greater) by Community Size, 2014-2016

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|----------------------|-------------------------------------|-------------|---------------|---------------|--------------------|--------|
| | 1-5 Pumpers | 6-9 Pumpers | 10-19 Pumpers | 20-39 Pumpers | 40 or More Pumpers | |
| 500,000 or more | 0.0% | 0.0% | 30.0% | 30.0% | 40.0% | 100.0% |
| 250,000 to 499,999 | 8.3% | 25.0% | 41.7% | 16.7% | 8.3% | 100.0% |
| 100,000 to 249,999 | 40.5% | 43.2% | 10.8% | 5.4% | 0.0% | 100.0% |

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|----------------------|-------------------------------------|----------|-----------|-------------|-------------------|--------|
| | No Pumpers | 1 Pumper | 2 Pumpers | 3-4 Pumpers | 5 or More Pumpers | |
| 50,000 to 99,999 | 2.6% | 0.0% | 15.8% | 36.8% | 44.7% | 100.0% |
| 25,000 to 49,999 | 2.9% | 8.8% | 32.4% | 25.0% | 30.9% | 100.0% |
| 10,000 to 24,999 | 0.9% | 11.6% | 32.0% | 39.1% | 16.4% | 100.0% |
| 5,000 to 9,999 | 2.3% | 23.5% | 44.6% | 23.8% | 5.8% | 100.0% |
| 2,500 to 4,999 | 6.5% | 39.5% | 43.0% | 9.2% | 1.8% | 100.0% |
| Under 2,500 | 21.3% | 55.7% | 20.5% | 2.4% | 0.2% | 100.0% |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Note that pumpers reported above had a capability of 640 gpm or greater. Note that many departments reported other fire suppression vehicles including apparatus with pumps less than 640 gpm, hose wagons, brushfire vehicles, tankers etc.

Table 11
Other Suppression Vehicles by Community Size, 2014-2016

| Percentage of Fire Departments With Other Suppression Vehicles | | | | | | | |
|---|------------|------------|------------|--------------|--------------|-------------------|--------------|
| Population Protected | 1-3 | 4-5 | 6-9 | 10-19 | 20-29 | 30 or More | Total |
| 500,000 or more | 30.0% | 0.0% | 20.0% | 40.0% | 0.0% | 10.0% | 100.0% |
| 250,000 to 499,999 | 40.0% | 30.0% | 20.0% | 10.0% | 0.0% | 0.0% | 100.0% |

| Percentage of Fire Departments With Other Suppression Vehicles | | | | | | |
|---|-------------|----------|----------|------------|------------------|--------------|
| Population Protected | None | 1 | 2 | 3-4 | 5 or More | Total |
| 100,000 to 249,999 | 10.5% | 13.2% | 31.6% | 31.6% | 13.2% | 100.0% |
| 50,000 to 99,999 | 17.6% | 26.5% | 25.0% | 16.2% | 14.7% | 100.0% |
| 25,000 to 49,999 | 23.1% | 21.3% | 23.6% | 19.6% | 12.4% | 100.0% |
| 10,000 to 24,999 | 19.2% | 37.7% | 18.8% | 16.5% | 7.7% | 100.0% |
| 5,000 to 9,999 | 19.6% | 38.9% | 25.5% | 13.6% | 2.4% | 100.0% |
| 2,500 to 4,999 | 28.5% | 45.0% | 18.1% | 7.6% | 0.9% | 100.0% |
| Under 2,500 | 24.7% | 39.3% | 20.3% | 11.6% | 4.2% | 100.0% |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Other fire suppression vehicles including apparatus with pumps less than 640 gpm, hose wagons, brushfire vehicles, tankers etc.

Table 12
Aerial Apparatus by Community Size (Percent), 2014-2016

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|-----------------------------|--|-----------------------------|-----------------------------|-------------------------------|------------------------------------|--------------|
| | No Aerial Apparatus | 1-5 Aerial Apparatus | 6-9 Aerial Apparatus | 10-19 Aerial Apparatus | 20 or More Aerial Apparatus | |
| 500,000 or more | 0.0% | 30.0% | 50.0% | 10.0% | 10.0% | 100.0% |
| 250,000 to 499,999 | 16.7% | 75.0% | 0.0% | 8.3% | 0.0% | 100.0% |

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|-----------------------------|--|---------------------------|---------------------------|-----------------------------|-----------------------------------|--------------|
| | No Aerial Apparatus | 1 Aerial Apparatus | 2 Aerial Apparatus | 3-4 Aerial Apparatus | 5 or More Aerial Apparatus | |
| 100,000 to 249,999 | 28.9% | 34.2% | 34.2% | 2.6% | 0.0% | 100.0% |
| 50,000 to 99,999 | 22.1% | 64.7% | 13.2% | 0.0% | 0.0% | 100.0% |
| 25,000 to 49,999 | 51.1% | 46.2% | 2.7% | 0.0% | 0.0% | 100.0% |
| 10,000 to 24,999 | 71.5% | 28.1% | 0.4% | 0.0% | 0.0% | 100.0% |
| 5,000 to 9,999 | 94.1% | 5.9% | 0.0% | 0.0% | 0.0% | 100.0% |
| 2,500 to 4,999 | 97.3% | 2.7% | 0.0% | 0.0% | 0.0% | 100.0% |
| Under 2,500 | 84.1% | 13.5% | 1.9% | 0.3% | 0.1% | 100.0% |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Note that pumpers reported above had a capability of 640 gpm or greater. Note that many departments reported other fire suppression vehicles including apparatus with pumps less than 640 gpm, hose wagons, brushfire vehicles, tankers etc.

Table 13
Fire Stations by Community Size, 2014-2016

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|----------------------|-------------------------------------|--------------|----------------|----------------|----------------|--------|
| | 1-5 Stations | 6-9 Stations | 10-19 Stations | 20-29 Stations | 30 or Stations | |
| 500,000 or more | 0.0% | 0.0% | 20.0% | 40.0% | 40.0% | 100.0% |
| 250,000 to 499,999 | 0.0% | 33.3% | 50.0% | 8.3% | 8.3% | 100.0% |
| 100,000 to 249,999 | 41.0% | 48.7% | 5.1% | 2.6% | 2.6% | 100.0% |

| Population Protected | Percentage of Fire Departments With | | | | | Total |
|----------------------|-------------------------------------|-----------|------------|------------|--------------------|--------|
| | No Stations | 1 Station | 2 Stations | 3 Stations | 4 or More Stations | |
| 50,000 to 99,999 | 0.0% | 2.6% | 18.4% | 26.3% | 52.6% | 100.0% |
| 25,000 to 49,999 | 0.0% | 25.0% | 35.3% | 11.8% | 27.9% | 100.0% |
| 10,000 to 24,999 | 0.0% | 48.4% | 17.8% | 16.0% | 17.8% | 100.0% |
| 5,000 to 9,999 | 0.0% | 65.0% | 15.0% | 11.5% | 8.5% | 100.0% |
| 2,500 to 4,999 | 0.0% | 79.2% | 15.7% | 2.1% | 3.0% | 100.0% |
| Under 2,500 | 0.8% | 90.4% | 6.4% | 1.5% | 0.9% | 100.0% |

Source: 2014-2016 NFPA Fire Service Survey of Canada.

Table 14 (Table 15 shows same table in square miles) shows median square kilometers (service area), stations, and apparatus rates by community size in Canada and the United States. For square kilometers protected, the Canada to United States ratios within stratum were greater than one and in some cases greater than two (1.11 to 2.84) meaning that for communities less than 250,000 population Canadian fire departments protect areas in some cases more than twice the area of their United States fire department equivalent. In the case of communities greater than 250,000 population the Canada to United States ratio is less than one (0.65-0.83) indicating that Canadian fire departments protect smaller areas than their United States equivalents in large metropolitan communities (0.65 to 0.83).

For stations per 100 square kilometers, the Canada to United States ratio was less than one (0.28 to 0.74) for most community sizes, (Table 14, Figure 4). This indicates that there are typically less stations per square kilometer in Canada versus the United States. For communities protecting populations greater than 500,000 the number of stations per 100 square kilometers the number of stations per square kilometer is almost the same, with the Canadian to United States ratio being slightly greater than one.

Also from Table 14 and Figure 5, for pumpers and other suppression vehicles, Canadian rates were lower than the United States for all community sizes with the Canadian to United States ratios ranging from 1.0 to 0.4. For aerial apparatus per 100 square kilometers, for community sizes that reported aerial apparatus, the Canadian to United States ratios were also less than one. This indicates that Canadian fire departments typically have less pumpers (and other suppression vehicles) and aerial apparatus than their United States fire department equivalent.

Fire Department Emergency Medical Services

The level of emergency medical service (EMS) provided by fire departments by size of community protected for the 2014-2016 period is provided in [Table 16](#). The larger the community, the more likely EMS service is provided. Nationwide 1,626 (44.3%) of departments provided no EMS service, 1,860 departments (50.6%) provided EMS service, and 186 (5.1%) of departments provided EMS and advanced life support.

For departments protecting less than 50,000 population 36.0% to 49.6% do not provide any emergency medical services. For communities protecting 50,000 population more than 48.5% to 80.0% of fire departments provide emergency medical technicians that have the basic life support certification. Interestingly, no large departments protecting communities greater than 250,000 population had emergency medical technicians with advanced life support certification. Fire departments protecting populations between 25,000 and 99,999 had the most departments with the advanced life support certification.

Table 14
Median Square Kilometers, Stations, and Apparatus Rates By Community Size for
Canada and the United States, 2014-2016

| Community Size | Area Protected Square Kilometers | | | Stations per 100 Square Kilometers | | | Pumpers and Other Suppression Vehicles per 100 Square Kilometers | | | Aerial Apparatus per 100 Square Kilometers | | |
|--------------------|----------------------------------|---------------|-------|------------------------------------|---------------|-------|--|---------------|-------|--|---------------|-------|
| | Canada | United States | Ratio | Canada | United States | Ratio | Canada | United States | Ratio | Canada | United States | Ratio |
| 500,000 or more | 573.7 | 878.0 | 0.7 | 30.4 | 30.2 | 1.0 | 40.3 | 40.9 | 1.0 | 8.2 | 8.8 | 0.9 |
| 250,000 to 499,999 | 284.9 | 344.5 | 0.8 | 25.9 | 38.9 | 0.7 | 36.5 | 48.7 | 0.7 | 4.7 | 7.8 | 0.6 |
| 100,000 to 249,999 | 181.3 | 163.2 | 1.1 | 22.2 | 37.0 | 0.6 | 29.6 | 49.3 | 0.6 | 7.4 | 8.2 | 0.9 |
| 50,000 to 99,999 | 253.8 | 89.4 | 2.8 | 10.6 | 37.5 | 0.3 | 17.2 | 45.0 | 0.4 | 2.6 | 7.5 | 0.4 |
| 25,000 to 49,999 | 160.6 | 67.3 | 2.4 | 8.4 | 29.9 | 0.3 | 16.7 | 49.8 | 0.3 | 4.2 | 10.0 | 0.4 |
| 10,000 to 24,999 | 220.1 | 64.7 | 3.4 | 6.1 | 20.7 | 0.3 | 12.2 | 41.4 | 0.3 | 0.0 | 10.4 | 0.0 |
| 5,000 to 9,999 | 163.2 | 90.6 | 1.8 | 4.1 | 7.4 | 0.6 | 12.3 | 29.6 | 0.4 | 0.0 | 0.0 | - |
| 2,500 to 4,999 | 180.0 | 93.2 | 1.9 | 3.7 | 7.2 | 0.5 | 11.2 | 28.8 | 0.4 | 0.0 | 0.0 | - |
| Under 2,500 | 129.5 | 95.8 | 1.4 | 5.2 | 7.0 | 0.7 | 10.4 | 28.0 | 0.4 | 0.0 | 0.0 | - |

Source: 2014-2016 NFPA Fire Service Surveys of Canada and the United States.

The median is a form of the average, where half of the data is above the value and half is below.

One Square Kilometer equals 0.386 Square Miles.

Table 15
Median Square Miles, Stations, and Apparatus Rates by Community
Size for Canada and the United States, 2014-2016

| Community Size | Area Protected Square Miles | | | Stations per 100 Square Miles | | | Pumpers and Other Suppression Vehicles per 100 Square Miles | | | Aerial Apparatus per 100 Square Miles | | |
|--------------------|-----------------------------|---------------|--------------------|-------------------------------|---------------|--------------------|---|---------------|--------------------|---------------------------------------|---------------|--------------------|
| | Canada | United States | Percent Difference | Canada | United States | Percent Difference | Canada | United States | Percent Difference | Canada | United States | Percent Difference |
| 500,000 or more | 221.5 | 339 | -41.9% | 11.7 | 11.7 | 0.7% | 15.6 | 15.8 | -1.3% | 3.2 | 3.4 | -7.1% |
| 250,000 to 499,999 | 110 | 133 | -18.9% | 10.0 | 15.0 | -40.2% | 14.1 | 18.8 | -28.6% | 1.8 | 3.0 | -49.3% |
| 100,000 to 249,999 | 70 | 63 | 10.5% | 8.6 | 14.3 | -50.0% | 11.4 | 19.0 | -50.0% | 2.9 | 3.2 | -10.5% |
| 50,000 to 99,999 | 98 | 34.5 | 95.8% | 4.1 | 14.5 | -112.1% | 6.6 | 17.4 | -89.6% | 1.0 | 2.9 | -95.8% |
| 25,000 to 49,999 | 62 | 26 | 81.8% | 3.2 | 11.5 | -112.6% | 6.5 | 19.2 | -99.5% | 1.6 | 3.8 | -81.8% |
| 10,000 to 24,999 | 85 | 25 | 109.1% | 2.4 | 8.0 | -109.1% | 4.7 | 16.0 | -109.1% | 0.0 | 4.0 | -200.0% |
| 5,000 to 9,999 | 63 | 35 | 57.1% | 1.6 | 2.9 | -57.1% | 4.8 | 11.4 | -82.4% | 0.0 | 0.0 | - |
| 2,500 to 4,999 | 69.5 | 36 | 63.5% | 1.4 | 2.8 | -63.5% | 4.3 | 11.1 | -88.1% | 0.0 | 0.0 | - |
| Under 2,500 | 50 | 37 | 29.9% | 2.0 | 2.7 | -29.9% | 4.0 | 10.8 | -92.0% | 0.0 | 0.0 | - |

Source: 2014-2016 NFPA Fire Service Surveys of Canada and the United States.

The median is a form of the average, where half of the data is above the value and half is below.

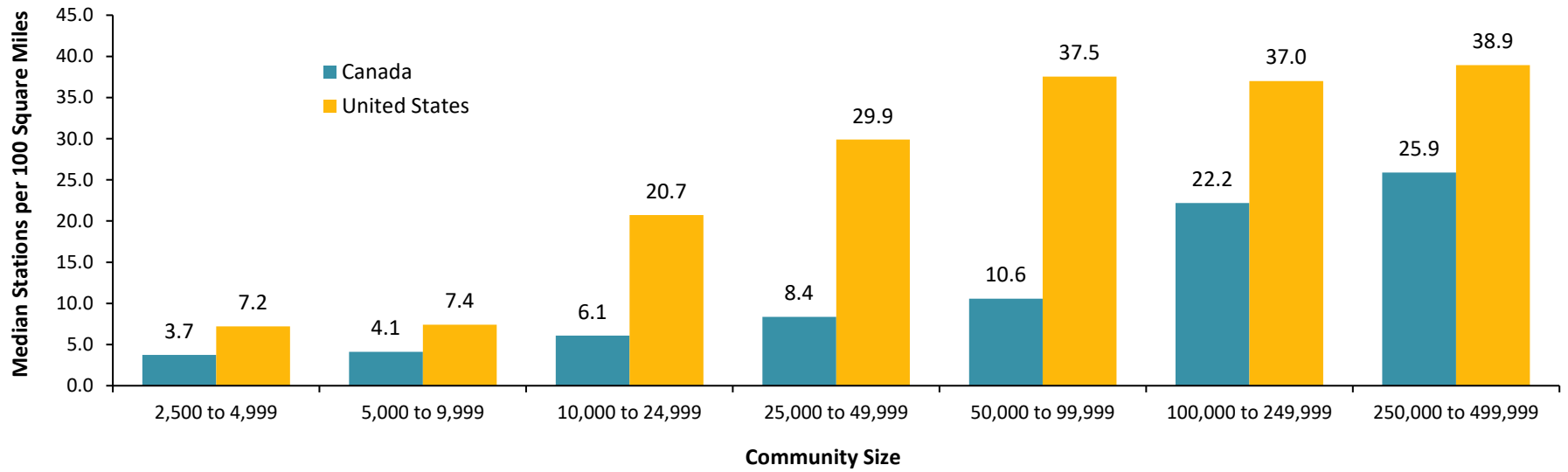


Figure 4.1: Median Stations per 100 Square Kilometers by Community Size in Canada and the United States

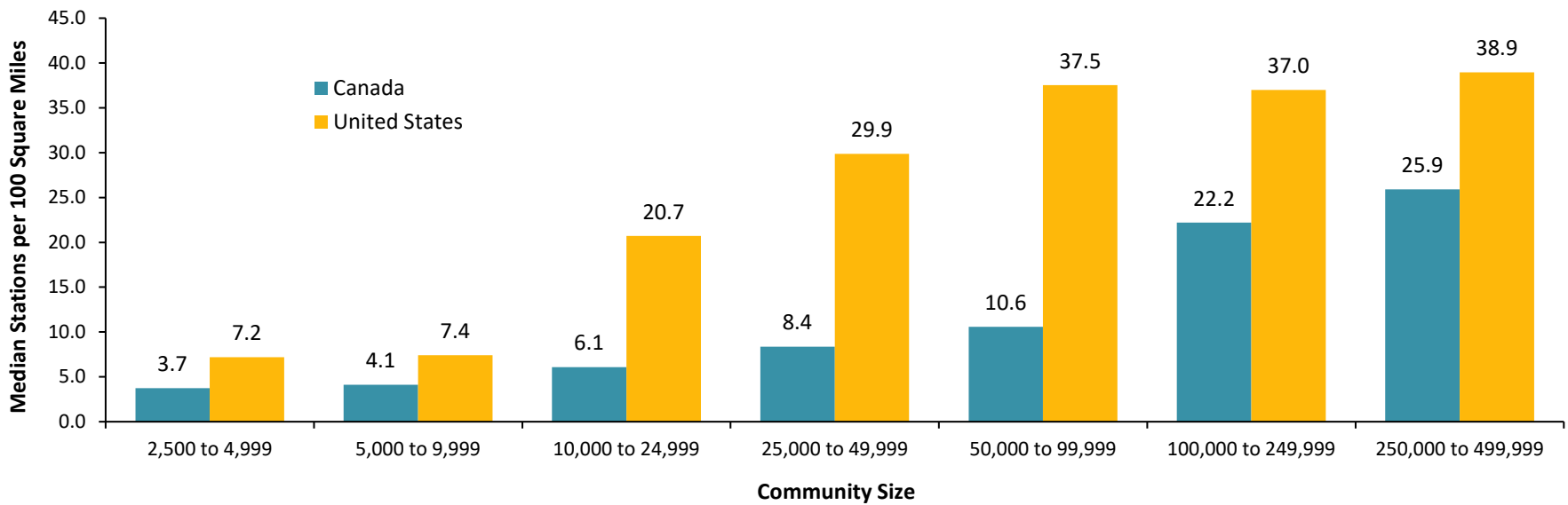


Figure 4.2: Median Stations per 100 Square Miles by Community Size in Canada and the United States

Source: 2014-2016 NFPA Fire Service Surveys of Canada and the United States.

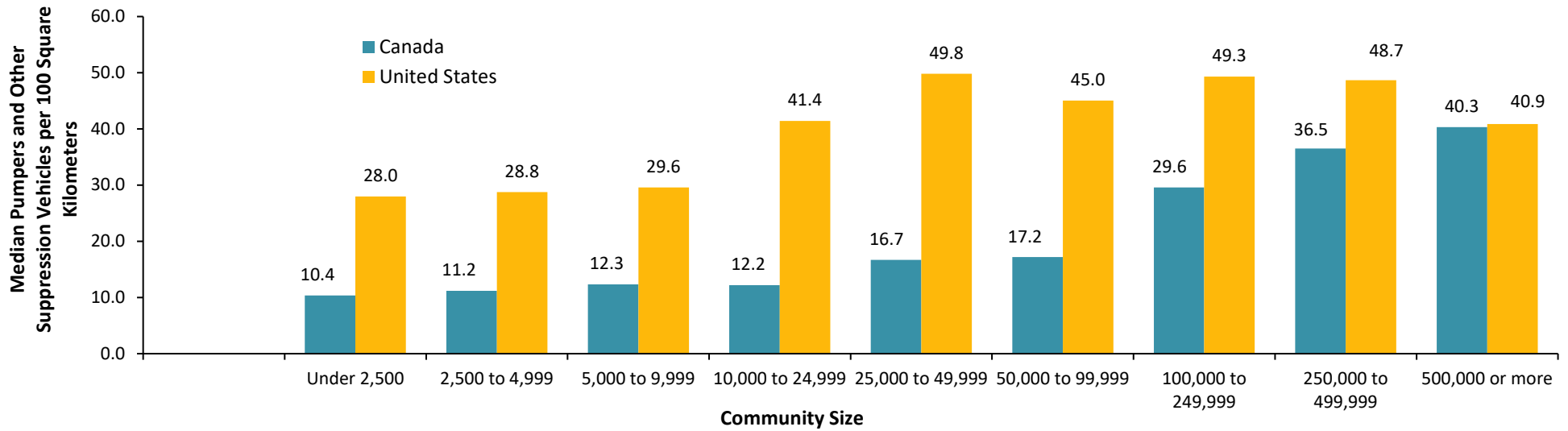


Figure 5.1: Median Pumps and Other Suppression Vehicles per 100 Square Kilometers by Community Size in Canada and the United States

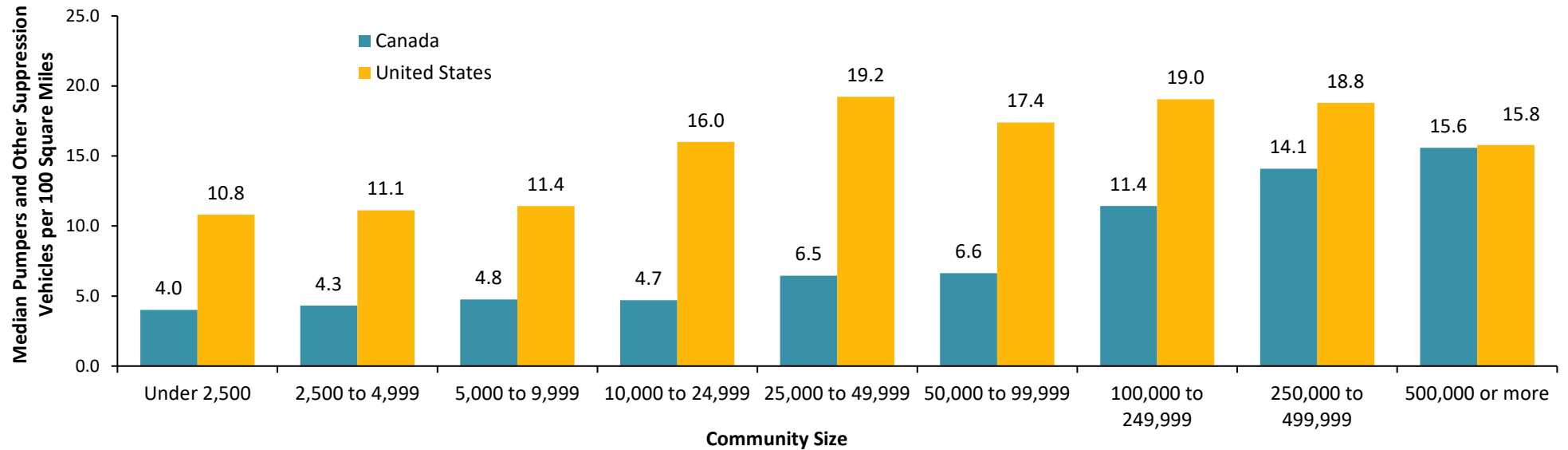


Figure 5.2: Median Pumps and Other Suppression Vehicles per 100 Square Miles by Community Size in Canada and the United States

Source: 2014-2016 NFPA Fire Service Surveys of Canada and the United States.

Table 16
Departments Providing Emergency Medical Service by
Community Size (Percent), 2014-2016

| Population Protected | No EMS¹¹ | BLS¹² | ALS¹³ | Total |
|-----------------------------|----------------------------|-------------------------|-------------------------|--------------|
| 500,000 or more | 20.0% | 80.0% | 0.0% | 100.0% |
| 250,000 to 499,999 | 25.0% | 75.0% | 0.0% | 100.0% |
| 100,000 to 249,999 | 12.8% | 84.6% | 2.6% | 100.0% |
| 50,000 to 99,999 | 30.3% | 48.5% | 21.2% | 100.0% |
| 25,000 to 49,999 | 44.1% | 45.6% | 10.2% | 100.0% |
| 10,000 to 24,999 | 36.0% | 55.6% | 8.4% | 100.0% |
| 5,000 to 9,999 | 38.8% | 54.6% | 6.5% | 100.0% |
| 2,500 to 4,999 | 40.9% | 54.3% | 4.8% | 100.0% |
| Under 2,500 | 49.6% | 46.6% | 3.7% | 100.0% |
| Nationwide | 44.3% | 50.7% | 5.1% | 100.0% |

Source: NFPA Fire Service Survey of Canada.

¹¹ No Emergency Medical Services

¹² Emergency Medical Technicians with Basic Life Support Certification ¹³

Emergency Medical Technicians with Advanced Life Support Certification

Conclusions

There is a higher proportion of volunteer firefighters in Canada versus the United States. Like the United States, most of the career firefighters work in communities greater than 50,000 population and most of the volunteer firefighters work in communities less than 50,000 population.

The median rates of career firefighters per 1,000 population in Canada are comparable to that of the United States. Relative to the United States fire service the Canadian fire service median rates per 100 square miles for stations and apparatus is less than the United States.

The larger the community, the more likely emergency medical services will be provided. This is not too dissimilar to what is compared in the United States. More than half of fire departments provide basic life support services. Nationwide the number of fire departments offering advanced life support in Canada is very low.