Faculty Demographics

Introduction

This document explores various demographic aspects of the Canadian faculty (and equivalent) in astronomy.   This analysis is based on a database of Canadian faculty maintained by me. This database contains basic demographic data for each person, information on their PhD degree, and various bibliometric data acquired from the NASA ADS system.

Basic Demographics

The database contains information on 174 individuals identified as non-retired faculty or equivalent working at Canadian universities and NRC. While every attempt is made to keep this information current, it can be difficult to track new hires, and especially, individuals who retire. The gender of each person is noted based on my personal estimation.

Basic data included for each person are their university of employment (or HAA), the province of their employment, the year, institute and country of their PhD and a best estimate of their original nationality. All this information was gathered from public information on the internet.

The median year of their PhD for Canadian faculty is 1996. The median year for men is 1995 and for women is 2001. This is a result of more women being hired in the last 20 years. Figure 1 shows this graphically. *The current faculty*, the percentage of women with PhDs before 1985. The fraction of women hired has risen to the point where more women than men have been hired who have PhDs after 2011.
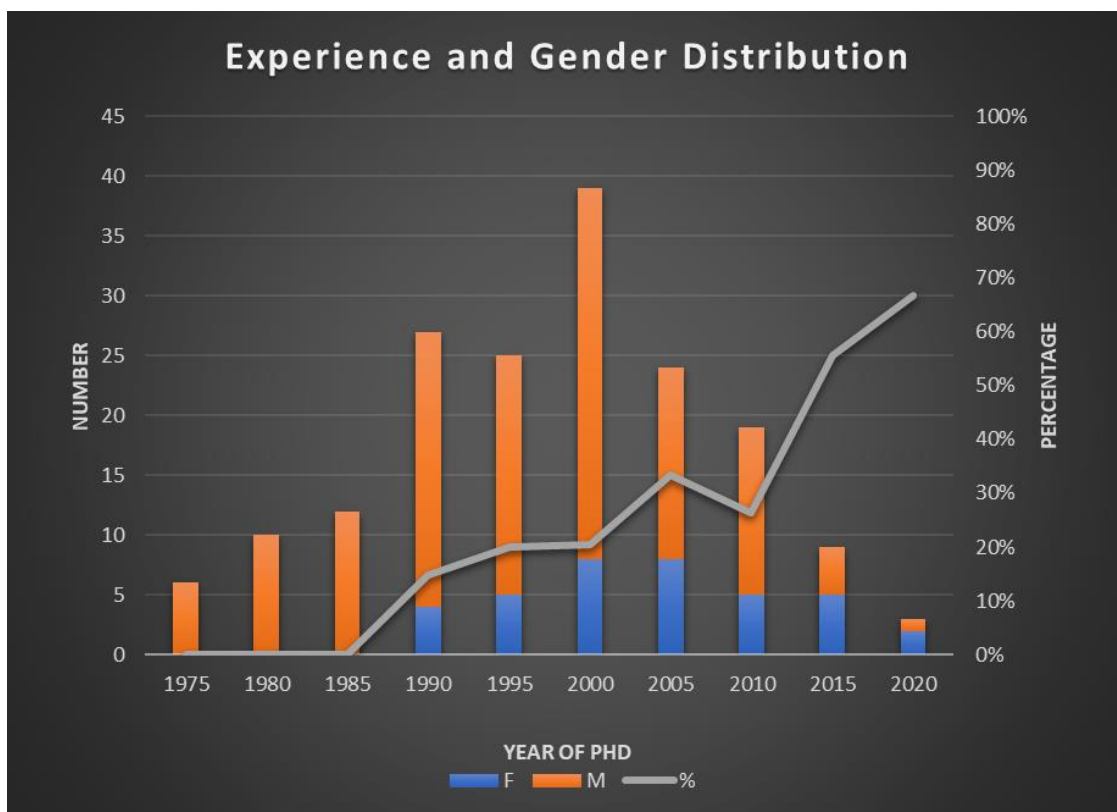

Figure 1 The experience and gender distribution of current Canadian faculty

Currently 21% of Canadian faculty are women. This percentage is increasing with time and this increase should continue given the increasing percentage of women being hired (Figure 1). This increase will also be driven by the retirement of older faculty, all of which are men.

Figure 1 also show the overall demographics of Canadian faculty. The median year of PhD for current Canadian faculty is 1996.5, very close to the mean which is 1995.6. Canadian faculty are retiring later than the nominal retirement age of 65 (personal observation).

If we assume that a person obtains their PhD at the age of 27 and retires when they are 70 years of age, we can estimate the number of coming number of retirements per year. The numbers are shown in Figure 2. The figure shows there are 5 individuals who "should" have retired using the above assumptions to estimate retirement age. If the assumed age of retirement is increased then the years along the x-axis will increase. So, if the assumed retirement age is 72, then the x-axis will run from 2017 – 2037. Based on these assumptions we can expect approximately 17 retirements through 2025 and a further 15 through 2030. Looking further ahead approximately 27 people will retire between 2031 and 2035.
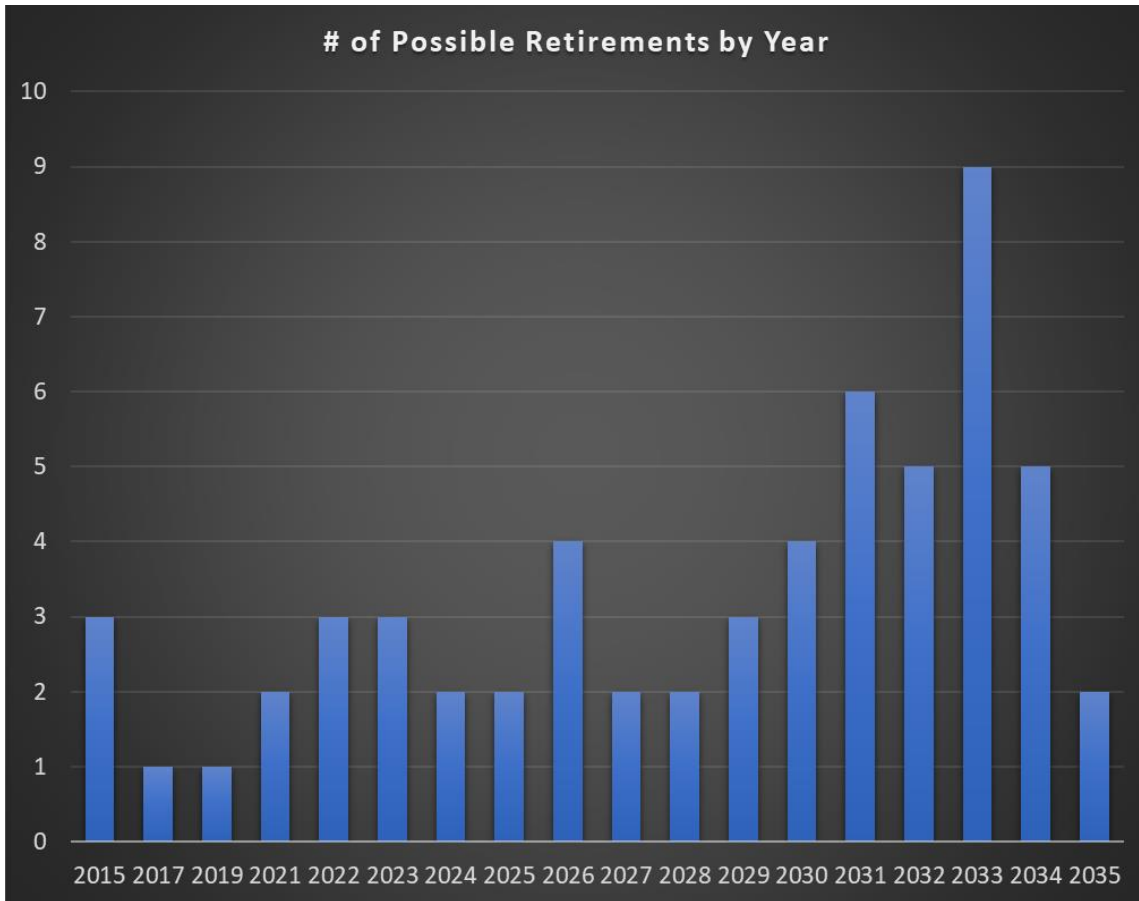

Figure 2 Number of possible retirements through 2035

The median and mean year of PhD differs significantly by institute. Figure 3 shows the median and mean year of PhD for all institutes, as well as the percentage of women faculty. Note, that for smaller departments a single hire or retirement or hire can significantly affect these numbers. (Of course, this is also true if I have missed a retirement or hire). The percentage of women in a faculty varies significantly
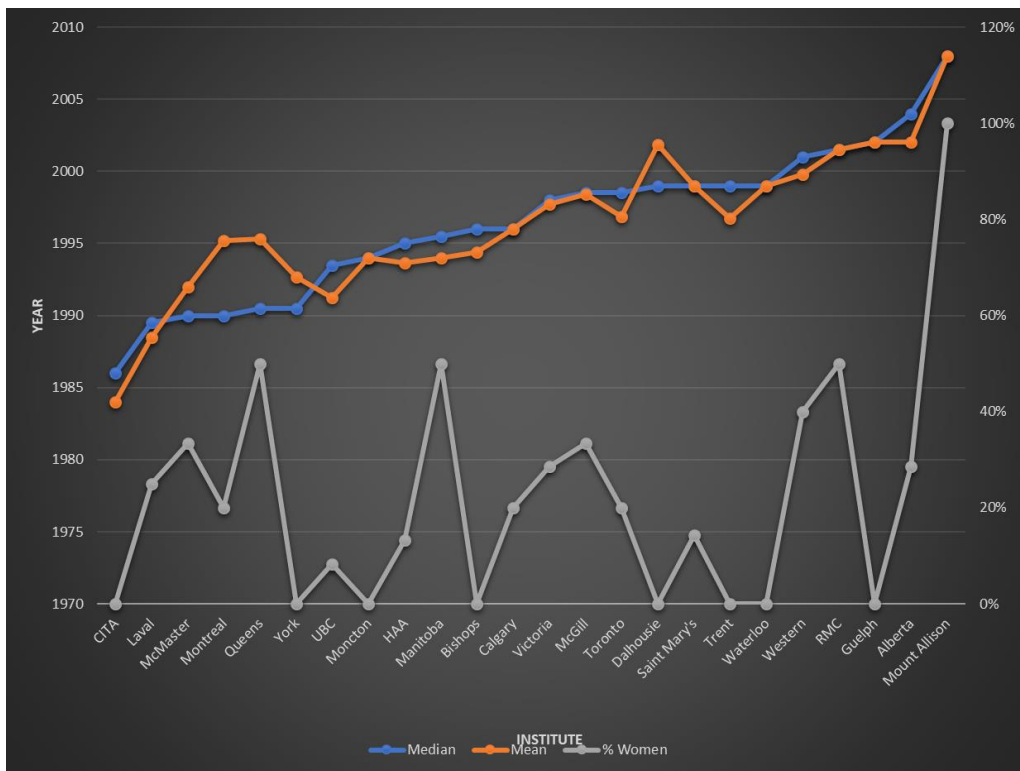
Figure 3 Median and mean year of PhD, and percentage women faculty for Canadian institutes

It is interesting to look at the distribution of 'country of PhD' for Canadian faculty, which is shown in Figure 4. The largest percentage (44%) of faculty members received their PhD in the US while 1/3 of faculty received their PhD in Canada and 10% in the UK. Canadian faculty received their PhD from a total of 13 different countries
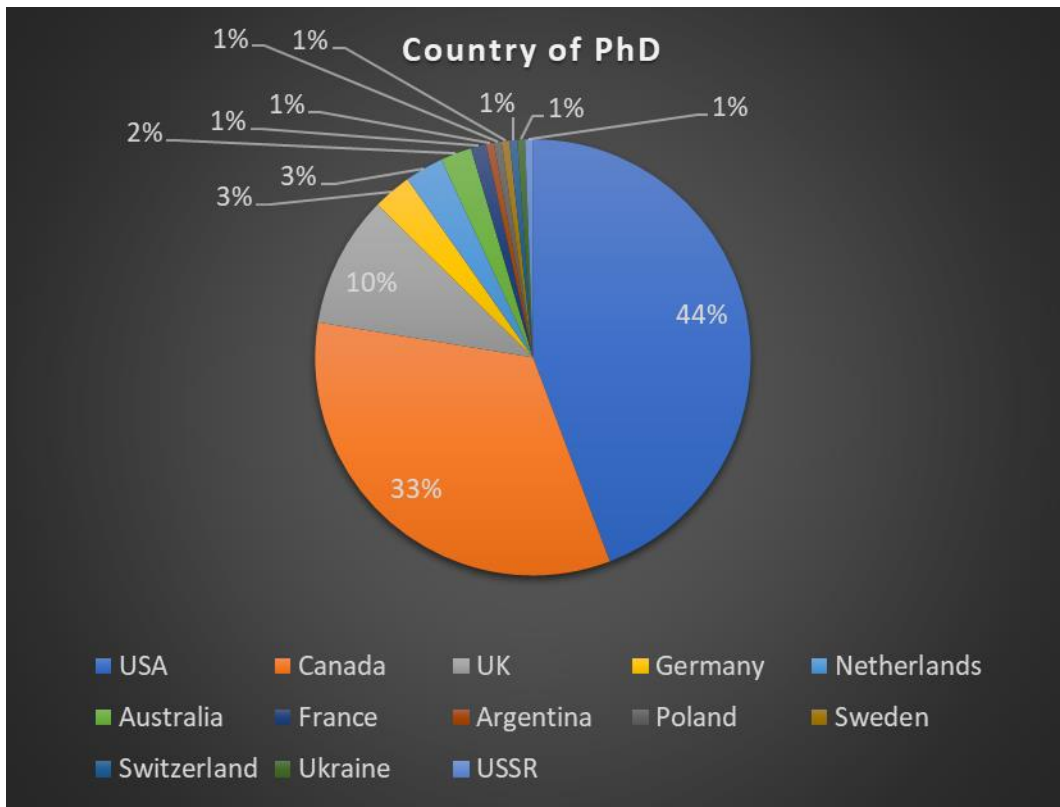

Figure 4 Country of PhD

The list of faculty members were divided into two groups, one who received their PhD before 1996, and the second who received their PhD in 1996 or later. The first group totaled 80 people while the second totaled 94. There were twelve countries represented in the first group but only seven in the second group. More recent Canadian faculty are getting their degrees in a more concentrated set of countries. For the first group 47% received PhDs in the US while 30% received their PhD in Canada, while for the second the breakdown was 43%/36%. It appears there is a small shift towards Canadian faculty having received their PhD in Canada.

The breakdown of the nationality (at birth) of Canadian faculty is shown in Table 1. Only nationalities representing 2% or more of the total are indicated. Almost 60% of faculty positions are held by Canadians, three times as many as held by Americans. Together, Canadians and Americans hold 80% of Canadian faculty positions

Canada	USA	UK	Germany	Australia	Netherlands
58%	20%	5%	2%	2%	2%

Fifty-eight percent of Canadian faculty are Canadian by birth, but where do this subset of Canadian faculty get their degrees? Fifty-three percent of Canadian (by birth) faculty members obtain their PhDs in Canada, while thirty-four percent obtain their degrees in the US. This is quite different from non-Canadian (by birth) faculty members, where 59% obtain their degrees in the US, 14% in the UK and only 5% in Canada.

As the database contains the year of hire to a faculty position as well as the year of PhD, we can investigate the time from end of PhD to faculty hire. The sample was divided into 10-year periods and the mean and median time to a faculty hire was calculated (Figure 5). No strong trend is seen in the data, but a shortening of the time to obtain a first faculty position has shortened by a year in the last 25 years or so.
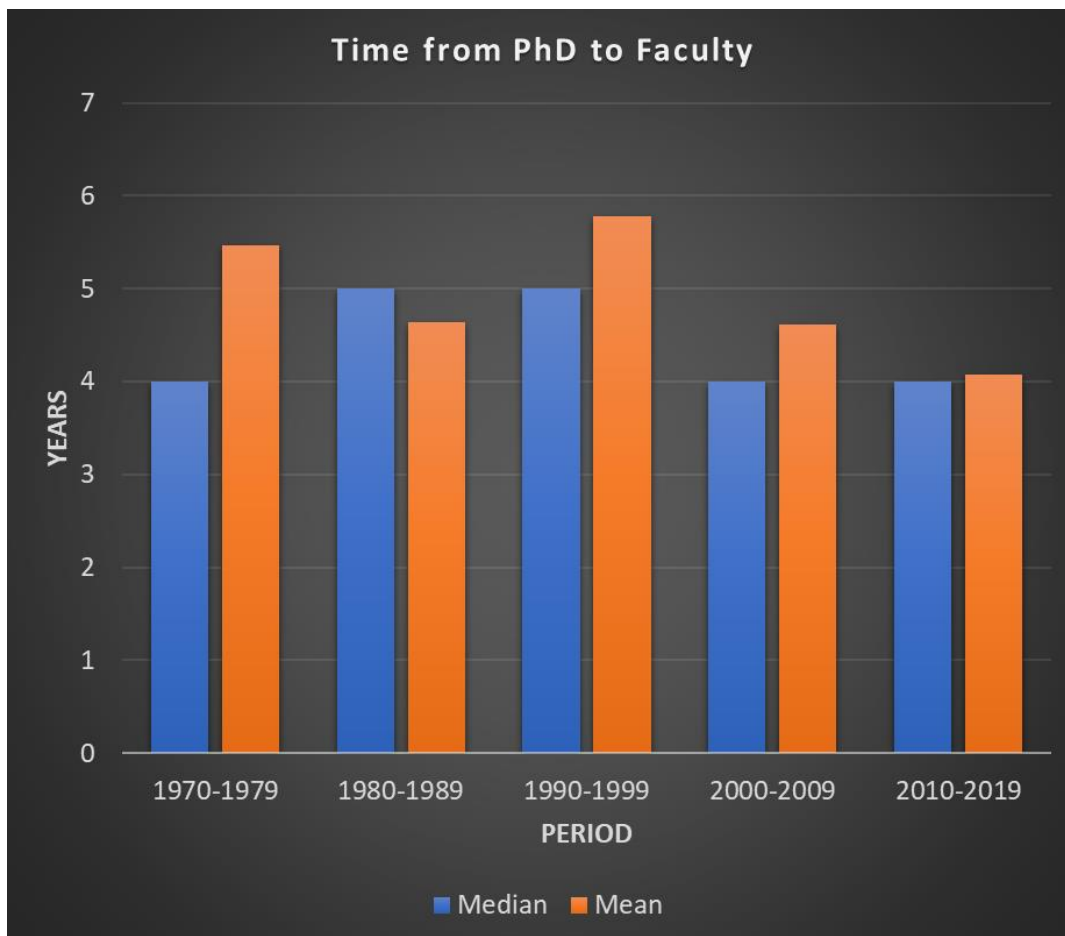

Figure 5 Time from PhD to Faculty