Life Expectancy

Life expectancy gets used for a number of purposes but most people do not understand what it really means. A proper understanding of life expectancy can be very important for good retirement planning.

Life expectancy is simply the average length of time a group of people the same age is expected to live. The most commonly quoted figures relate to life expectancy of a newly born person. According to the latest Canadian population tables (from the 2000 census), our life expectancy is:

Males	76.9 years
Females	82.0 years

Loosely speaking, that means that if there are 1,000 baby boys born in Canada in 2001, we expect that 500 of them will die prior to their 76.9th birthday and 500 of them will live to celebrate their 76.9th birthday[1]. And if there were 1,000 baby girls born, 500 of them will live past their 82nd birthday while 500 of them will die before age 82.

These numbers may be useful as a proxy for comparing the health and medical situations in different countries, but they really do not help most of us because they do not speak to our personal situation.

If you are reading this, you probably have an expectation of living to an older age than the commonly quoted numbers. To be rather blunt, if you are 50 years old, you have survived many opportunities to die. As a 50 year old, you have a life expectancy based on your current age – longer than for a new born baby. The following table gives some life expectancies for an average Canadian at different ages.

Table 1 - Canadian Life Expectancies

Age	Male	Female
0	76.92	82.03
20	57.72	62.65
30	48.17	52.85
40	38.64	43.13
50	29.41	33.67
60	20.84	24.72
70	13.46	16.57
80	7.67	9.67
90	3.87	4.94

[1] This is an approximation. The age at which half the group is alive and half dead actually occurs a little later than life expectancy. For most ages, the difference is a matter of weeks or months. But our statement is close enough to be acceptable for most purposes and it certainly is close enough to be acceptable for purposes of planning for retirement. Using some statistical terms, our statement would be true if the mean and the median age at death are identical, but mortality rates are skewed resulting in a median slightly greater than the mean (or average).

If you are a 40 year old female, a life expectancy of 43.13 means that you have a 50% chance of living to age 83.13 and of dying *some time* after that.

So if we have a group of 100 females all aged 40, we can predict that about 50 of them will die over the next forty-three years and 50 of them will reach age 83. For those who do reach age 83, they will then have a further life expectancy of about eight years, meaning that 25 of them are expected to die between ages 83 and 91 and 25 will see 91 candles on a birthday cake.

Implications for Retirement Planning

It was not that long ago that most financial planners were using your life expectancy as the length of time you would need money after you retire. In other words, financial planners were giving you a 50% chance of running out of money during your life.

For a 65 year old male, life expectancy is 17 years meaning that you would have run out of money if you lived to be 82.

Financial planners now design plans based on having enough money until age 90 or in some cases 100. Sometimes they will build in enough conservatism to cover off the possibility that you might live even longer.

Life Expectancy Watch-outs

The table of life expectancy shown above is based on statistics gathered about all Canadians. That includes people who are ill or in poor health as well as those in good health. As actuaries, we recognize that there can be a big difference in the mortality rates for those who are physically capable of working and those who are not able to work. So we have developed tables based on mortality for working people. Those tables predictably produce a longer life expectancy than the broad population table used above.

Most life expectancy tables ignore future potential improvements in medical care and lifestyle. But we can make predictions about how future advances may affect average mortality and hence our life expectancy.

The following table is based on mortality rates developed in 1994 from people who were sufficiently healthy to be able to work and be covered by a pension plan.[2] The rates have then been projected to account for medical and lifestyle changes to date as well as those expected to occur in the future.

Table 2 -Working Canadians' Life Expectancies in 2011
(includes future advances in medical care and lifestyle)

Age	Male	Female
0	86.83	87.85
20	65.49	67.10
30	54.94	56.75
40	44.43	46.46
50	33.98	36.29
60	24.04	26.51
70	15.54	17.86
80	8.72	10.47
90	4.36	5.22

[2] The mortality table is called the 1994 Uninsured Pensioners Mortality Table (UP94).

This table shows some values that at first may appear odd. Up to age 50, the older you are, the earlier you are expected to die (by a few months) compared to a younger person. This is the opposite of what we saw in the first table above. This happens because the younger you are today, the longer you have for all the medical advances to get made and to presumably affect your longevity. While those above age 50 are still predicted to benefit from future advances, those advances are not likely to have as significant an impact on their life expectancy.

Male and Female Life Expectancy

Most people are aware that females are generally expected to live longer than males. Based on Table 1, women outlive men on average by about 5 years.

If you compare Tables 1 and 2, you will also notice that future life expectancy for females is not as dramatically longer than for males. When we include predictions for future improvements, the difference is only about 2 years.

This is a continuation of a trend that has been noted over the past 30 years. Up to about 1960, women's life expectancy was improving faster than men's. This was generally attributed to significant reductions in mortality from childbirth. Since then, women's life expectancy has continued to improve, but at a slower pace than for men. There are a number of possibilities advanced for this, such as women adopting more of the bad habits previously enjoyed by men.

Personal Life Expectancy

Life expectancy is based upon averages developed from a very large group of people. One should always be careful when using average data for an individual person. While life expectancy can be a fairly good predictor when applied to a large group, it will likely be wrong if applied to an individual. But that does not mean it is useless. We can still use life expectancy to give us an average which we can use as a starting point for planning – if we are careful.

Individual characteristics will affect your personal life expectancy. For example, it is well documented that smoking, excess weight and high blood pressure (among other things) will increase your chances of dying and thereby shorten your life expectancy. There is also a genetic linkage. If your ancestors lived to a ripe old age, then your chances of doing so too are increased. Unfortunately, if your ancestors generally died at a younger age, then you are more likely to follow their lead.

Because of the variability of these personal factors, there are no scientifically developed tables that have sufficient statistical validity to calculate a more personal life expectancy for you. There are a number of web sites that will ask you some health and lifestyle questions and based on that provide you with a personal life expectancy. While these can be fun to play with, they should be taken with a grain of salt.